

		K.S.R. COLLEGE OF ENGINEERING (Autonomous) (Approved by AICTE, New Delhi & Affiliated to Anna University) K.S.R. Kalvi Nagar, Tiruchengode – 637 215				CURRICULUM PG R - 2012	
Department		Master of Computer Applications					
Programme		M.C.A – Master of Computer Applications					
SEMESTER - I							
Sl. No.	Course Code	Course Name	Hours/ Week			Credit	
			L	T	P	C	
THEORY							
1.	CA123101	Accounting and Financial Management	3	1	0	4	
2.	CA123102	Digital Fundamentals and Computer Organization	3	1	0	4	
3.	CA123103	Data Structures	3	0	0	3	
4.	CA123104	Database Management Systems	3	0	0	3	
5.	CA123105	Problem Solving and Programming in C	3	0	0	3	
PRACTICAL							
6.	CA123110	Data Structures Lab	0	0	3	2	
7.	CA123111	Database Management Systems Lab	0	0	3	2	
8.	CA123112	Problem Solving and Programming in C Lab	0	0	3	2	
9.	HR123113	Career Skills Development – I	0	2	0	1	
Total Credits						24	


SEMESTER - II						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit
			L	T	P	C
THEORY						
1.	CA123201	Applied Mathematics	3	1	0	4
2.	CA123202	Design and Analysis of Algorithms	3	0	0	3
3.	CA123203	Operating Systems	3	0	2	4
4.	CA123204	System Software	3	0	0	3
5.	CA123205	Object Oriented Programming Using C++	3	0	0	3
PRACTICAL						
6.	CA123210	Algorithms Lab	0	0	3	2
7.	CA123211	System Software Lab	0	0	3	2
8.	CA123212	Object Oriented Programming Lab	0	0	3	2
9.	CA123213	Mini Project - I	0	0	3	2
10.	HR123214	Career Skills Development – II	0	2	0	1
Total Credits						26

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Department			Master of Computer Applications					
Programme			M.C.A – Master of Computer Applications					
SEMESTER - III								
Sl. No.	Course Code	Course Name	Hours/ Week			Credit		
			L	T	P	C		
THEORY								
1.	CA123301	Data Communication and Network	3	0	0	3		
2.	CA123302	Software Engineering	3	1	0	4		
3.	CA123303	Java Programming	3	0	0	3		
4.	CA123304	Interactive Computer Graphics	3	0	0	3		
5.	CA123305	Microprocessor and its Applications	3	1	0	4		
PRACTICAL								
6.	CA123310	Networks Lab	0	0	3	2		
7.	CA123311	Java Programming Lab	0	0	3	2		
8.	CA123312	Microprocessor and Interactive Computer Graphics Lab	0	0	3	2		
9.	HR123313	Career Skills Development – III	0	2	0	1		
Total Credits						24		

SEMESTER - IV						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit
			L	T	P	C
THEORY						
1.	CA123401	Object Oriented Analysis and Design	3	0	0	3
2.	CA123402	Open Source Software	3	0	2	4
3.	CA123403	C# and .NET	3	1	0	4
4.	CA123404	Multimedia and its Applications	3	0	0	3
5.		Elective - I	3	0	0	3
PRACTICAL						
6.	CA123410	C# and .NET with Case Tool Lab	0	0	3	2
7.	CA123411	Multimedia Lab	0	0	3	2
8.	CA123412	Mini Project - II	0	0	3	2
9.	CA123413	Comprehensive Exam	0	2	0	1
10.	HR123414	Career Skills Development – IV	0	2	0	1
Total Credits						25

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Department			Master of Computer Applications					
Programme			M.C.A – Master of Computer Applications					
SEMESTER - V								
Sl. No.	Course Code	Course Name	Hours/ Week			Credit		
			L	T	P	C		
THEORY								
1.	CA123501	Internet Programming	3	1	0	4		
2.	CA123502	Software Testing and Quality Assurance	3	0	0	3		
3.	CA123503	Cryptography and Network Security	3	0	0	3		
4.		Elective – II	3	1	0	4		
5.		Elective – III	3	0	0	3		
PRACTICAL								
6.	CA123510	Internet Programming Lab	0	0	3	2		
7.	CA123511	Software Testing Lab	0	0	3	2		
8.	CA123512	Network Security Lab	0	0	3	2		
9.	CA123513	Project Phase – I	0	0	3	2		
Total Credits						25		

SEMESTER - VI						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit
			L	T	P	C
PRACTICAL						
1.	CA123610	Project Phase – II	0	0	24	12
Total Credits						12

	K.S.R. COLLEGE OF ENGINEERING (Autonomous) (Approved by AICTE, New Delhi & Affiliated to Anna University) K.S.R. Kalvi Nagar, Tiruchengode – 637 215	CURRICULUM PG R - 2012
Department	Master of Computer Applications	
Programme	M.C.A – Master of Computer Applications	

List of Electives

ELECTIVE – I (SEMESTER – IV Common)						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit
			L	T	P	C
1.	CA124401	Compiler Design	3	0	0	3
2.	CA124402	TCP/IP	3	0	0	3
3.	CA124403	Unix and Network Programming	3	0	0	3
4.	CA124404	Component Based Technology	3	0	0	3
5.	CA124405	Network Administration	3	0	0	3
6.	CA124406	Software Project Management	3	0	0	3
7.	CA124407	Database Technologies	3	0	0	3
8.	CA124408	Advanced Operating Systems	3	0	0	3
9.	CA124409	Organizational Behaviour	3	0	0	3
10.	CA124410	Operations Research	3	0	0	3
11.	CA124411	Artificial Intelligence	3	0	0	3
12.	CA124412	Unix Internals	3	0	0	3

ELECTIVE – II (SEMESTER –V Research Oriented)						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit
			L	T	P	C
1.	CA124501	Soft Computing	3	1	0	4
2.	CA124502	Digital Image Processing	3	1	0	4
3.	CA124503	High Speed Networks	3	1	0	4
4.	CA124504	Artificial and Neural Networks	3	1	0	4
5.	CA124505	Data Mining and Data Warehousing	3	1	0	4
6.	CA124506	Cloud Computing	3	1	0	4
7.	CA124507	Mobile Computing	3	1	0	4
8.	CA124508	Distributed Computing	3	1	0	4
9.	CA124509	Natural Language Processing	3	1	0	4
10.	CA124510	Bio-Informatics	3	1	0	4

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ELECTIVE – III (SEMESTER – V Industry Oriented)						
Sl. No.	Course Code	Course Name	Hours/ Week			Credit C
			L	T	P	
1.	CA124511	Electronic Commerce	3	0	0	3
2.	CA124512	Supply Chain Management	3	0	0	3
3.	CA124513	XML and Web Services	3	0	0	3
4.	CA124514	Web Graphics	3	0	0	3
5.	CA124515	E-Learning Technology	3	0	0	3
6.	CA124516	Health Care Information Systems	3	0	0	3
7.	CA124517	Enterprise Computing	3	0	0	3
8.	CA124518	Agent Based Intelligent Systems	3	0	0	3
9.	CA124519	Software Agent	3	0	0	3
10.	CA124520	Middleware Technology	3	0	0	3
11.	CA124521	Mobile Application Development	3	0	0	3

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I****ACCOUNTING AND FINANCIAL MANAGEMENT**

L T P C

CA123101

3 1 0 4

Objective(s): *To learn the Accounting principles and preparation of Final Accounts.
To understand Costing and various Cost methods.
To analyze various Financial Statements.
To study about Budgets and Budgetary Control.
To gain knowledge in Financial Management and Investment Decisions.*

UNIT – I FINANCIAL ACCOUNTING**12 Hrs**

Financial Accounting - Definition - Accounting Principles - Concepts and Conventions - Journalizing Transactions and Ledger Posting - Trial Balance. Final Accounts: Trading Account - Profit and Loss Account - Balance Sheet. Depreciation: Straight line method - Written down value method

UNIT – II COST ACCOUNTING**12 Hrs**

Meaning – Objectives - Elements of Cost – Components - Cost Sheet – Classification – Methods. Marginal Costing and Cost Volume Profit Analysis - Break Even Analysis. Methods of Valuing Material issue: FIFO – LIFO – Weighted Average Cost Method – Standard Price Method

UNIT – III FINANCIAL ANALYSIS**12 Hrs**

Financial Statement Analysis - Types - Techniques - Ratios Analysis - Classification of Ratios - Funds Flow Analysis: Preparation of Fund Flow Statement - Cash Flow Analysis: Preparation of Cash Flow Statement - Difference between Fund Flow Analysis and Cash Flow Analysis.

UNIT – IV BUDGETS AND BUDGETARY CONTROL**12 Hrs**

Budgets and Budgetary Control – Meaning – Limitations – Classification - Sales Budget - Production Budget - Cost of Production Budget – Cash Budget – Master Budget - Flexible Budgeting - Zero Base Budgeting.

UNIT – V FINANCIAL MANAGEMENT**12 Hrs**

Introduction – Objectives – Functions – Role of Financial Manager – Investment Decisions: Capital Budgeting – Accounting Rate of Return – Net Present Value - Pay Back Period – Profitability Index – Internal Rate of Return.

L:45,T:15,Total Hours:60

Text Books:

1. S.N.Maheswari, "Financial and Management Accounting", Sultan Chand & Sons, 5th Edition, 2010
2. M Y Khan, P K Jain, "Financial Management Text, Problems & Cases", 6th edition, TMH, 2011.

References:

1. N. Ramachandran, Ramkumar Kakani, "Financial Accounting for Management", Second Edition, TMH, 2008
2. S.N.Maheshwari, "Financial Management Principles and Practice", Sultan Chand & Sons, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I****CA123102****DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION**

L	T	P	C
3	1	0	4

Objective(s): *To provide the deep knowledge about Digital technologies, Computer and Memory Organization.*

UNIT – I INTRODUCTION TO DIGITAL DESIGN 12 Hrs

Data Types - Data Representation -r, r-1 Complements - Arithmetic Operations - Fixed Point Representations, Floating Point Representations , Binary Codes - Error detection codes - Logic Gates, Boolean Algebra, Boolean Expressions – Simplification: Karnaugh map ,Tabular Simplification.

UNIT – II DIGITAL COMPONENTS 12 Hrs

Combinational Circuits: Half & Full Adder, Half and Full Subtractor - Sequential Circuits - Flip Flops - ICs - Decoders – Encoders – Multiplexers – deMultiplexers - Registers - Shift Registers - Binary Counters.

UNIT – III FUNCTIONAL UNITS 12 Hrs

Basic operational concepts, Bus structures, Machine instructions, memory locations, addressing modes, assembly language Arithmetic: Number representations, addition and subtraction of signed numbers, Design of fast adders, Multiplication of signed numbers, Fast multiplication and Integer division.

UNIT – IV PROCESSING UNIT 12 Hrs

Concepts, Execution of complete instruction, Multi bus organization, ALU; Control Unit: Hardwired Control, Micro programmed Control; Micro Instructions, Micro program sequencing, Micro instructions with next address field and pre-fetching.

UNIT – V MEMORY AND I/O ORGANIZATION 12 Hrs

RAM, ROM, Cache Memories, and Virtual memory Input and output organization: Accessing I/O devices, Interrupts, DMA, and Interface circuits.

L:45,T:15,Total Hours:60

Text Books:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, Fifth Edition, "Computer Organization", Tata McGraw Hill, 2002.
2. M. Morris Mano , "Digital Logic & Computer Design" PHI 2006.

References:

1. William Stallings, "Computer Organization and Architecture", Sixth Edition, Pearson Education, 2004.
2. John P. Hayes, "Computer Architecture and Organization", Third Edition, Tata McGraw Hill, 1998.
3. David A. Patterson, John L. Hennessy, "Computer Organization and Design", Third Edition, Morgan Kaufmann Publishers, 2005.
4. David E. Culler, Jaswinder Paul Singh, Anoop Gupta: Parallel Computer Architecture: Hardware / Software Approach, Elsevier Science, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I****CA123103****DATASTRUCTURES****L T P C****3 0 0 3**

Objective(s): *To master the design and data structure applications of linear data structures, tree, and graph Structures. To understand various algorithm design and analysis techniques.*

UNIT – I DATA STRUCTURES 12 Hrs

Introduction – Arrays – Structures – Stack: Definition and examples, Representing Stacks - Queues and lists: Queue and its Representation, lists – Applications of Stack, Queue and Linked Lists.

UNIT – II TREES 12 Hrs

Binary Trees – Operations on binary trees - Binary Tree Representations – node representation, internal and external nodes, implicit array representation – Binary tree Traversals - Huffman Algorithm – Representing Lists as Binary Trees.

UNIT – III SORTING AND SEARCHING 12 Hrs

General Background – Exchange sorts – Selection and Tree Sorting – Insertion Sorts – Merge and Radix Sorts – Basic Search Techniques – Tree Searching – General Search Trees – Hashing.

UNIT – IV GRAPHS AND THEIR APPLICATIONS 12 Hrs

Graphs – An application of graphs – Representation – transitive closure - Warshall's algorithm – Shortest path algorithm - a flow Problem – Dijkstra's algorithm – An application of scheduling - Linked representation of Graphs – Graph Traversals.

UNIT – V STORAGE MANAGEMENT 12 Hrs

General Lists: Operations, linked list representation, using lists, Freeing list nodes - Automatic list Management: Reference count method, Garbage Collection, Algorithms, Collection and compaction.

Total hours: 60**Text Book:**

1. Weiss "Data Structures and Algorithm Analysis in C", Addison Wesley, Second Edition, 2010.

References:

1. Robert Kruse & Clovis L. Tondo "Data Structures and Program Design in C", Prentice Hall 2nd edition., 1991.
2. Tanaenbaum A.S., Langram Y. Augestein M.J "Data Structures using C" Pearson Education, 2004.

1. Henry F. Korth, Abraham Silberchatz, S.Sudarshan, Database System Concepts, McGraw - Hill – 2007.
2. Ramez Elmasri, Shamkant B. Navathe – Fundamentals of Database Systems – Fifth Edition – Addison Wesley Higher Education -2007.

1. Raghu Ramakrishnan & Johannesgerhrke, "Data Base Management Systems", McGraw - Hill International Edition, 2000.
2. C.J.Date, Longman, Dr.S.Swamynathan, Introduction to Database System, Pearson Education – 2007.
3. Hoffer, Prescott & McFadden – Modern Database Management – Eighth Edition – prentice Hall – 2007.
4. Kifer, Bernstein & Lewis – Database System: An Application Oriented Approach, Complete Version – Second Edition – Addison Wesley Higher Education – 2006.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I**

		L	T	P	C
CA123105	PROBLEM SOLVING AND PROGRAMMING IN C	3	0	0	3

Objective(s): *The objective of learning is to develop problem-solving skills and couple them with Top-down. Design principles, it also the way to competent at algorithm design and program implementation. It provides useful guidance in separating the tasks of learning how to develop computer Algorithms and of then implementing them in programming language like C.*

UNIT – I INTRODUCTION TO COMPUTER PROBLEM SOLVING 9 Hrs

Introduction – The Problem Solving aspect – Top down Design – Implementation of Algorithms – Program Verification – Efficiency of Algorithms – Analysis of Algorithms.

UNIT – II FUNDAMENTAL ALGORITHMS 9 Hrs

Introduction – Exchanging the values – Counting – Factorial Computation – SINE computation – Base Conversion – Factoring Methods – Array Techniques.

UNIT – III INTRODUCTION TO C LANGUAGE 9 Hrs

Overview of C – Constants, Variables and Data Types – Operators and Expressions – Managing Input/Output Operations – Formatted I/O – Decision Making – Branching — IF, Nested IF – Switch – goto – Looping- While, do, for statements.

UNIT – IV ARRAYS, FUNCTIONS, STRUCTURES AND UNIONS 9 Hrs

Arrays – dynamic and multi-dimensional arrays – Character arrays and Strings – String handling Functions – User defined Functions – Categories of Functions – Recursion – Structures and Unions – Array of Structures – Structures and Functions.

UNIT – V POINTERS AND FILE MANAGEMENT 9 Hrs

Pointers – Declaration, Accessing a variable, character strings, pointers to functions and structures – File Management in C – Dynamic Memory allocation – Linked Lists – Preprocessors.

Total hours: 45

Text Books:

1. R.G.Dromey "How to Solve it by Computer", Pearson Education, India, 2007.
2. Herbert Schildt, C – The Complete Reference, McGraw Hill, New York, 2000.

References:

1. Deitel and Deitel "C How to Program", Addison Wesley, 2001.
2. Brian W.Kernighan & Dennis Ritchie "C Programming Language", PHI, 1990.
3. Byron.S.Gottfried "Schaum's Outline of Programming with C", 2nd Edition, 1996.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – I

CA123110	DATA STRUCTURE LAB	L	T	P	C
		0	0	3	2

Objective(s): *To develop programming skills in design and implementation of data structures and their applications.*

LIST OF EXPERIMENTS

1. Represent the given sparse matrix using one dimensional array and linked list.
2. Create a Stack and do the following operations using arrays and linked lists.
(i) Push (ii) Pop (iii) Peep
3. Create a program for infix, prefix and postfix notation using stack operation.
4. Create a Queue and do the following operations using arrays and linked lists. (i)Add (ii) Remove
5. Implement the operations on singly linked list, doubly linked list and circular linked list.
6. Create a binary search tree and do the following traversals.
(i) In-order (ii) Pre order (iii) Post order
7. Implement the following operations on a binary search tree.
(i) Insert a node (ii) Delete anode
8. Sorting the given list of numbers using heap and quick sort.
9. Perform the following operations in a given graph.
(i) Depth first search (ii) Breadth first search
10. Find the shortest path in a given graph using Dijkstra algorithm.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I**

		L	T	P	C
CA123111	DATABASE MANAGEMENT SYSTEMS LAB	0	0	3	2

Objective(s): *To Develop Queries using SQL, Programs in PL/SQL and to create application using front and back end tools.*

LIST OF EXPERIMENTS

1. Create an Employee Database with related tables like employee table, department table, and project table. Construct the table relationship with relevant constraints. Perform all DDL, DML, and TCL operations.
2. Create a student database with related tables like student personal Table and marks table. Perform the following operation:
 - (i) Create a view which contains top five students of a class
 - (ii) Create two different views which contain the students details whose results are pass and fail respectively.
3. Create a Bank database with customer table and account table.
 - (i) Design a trigger that doesn't allow user to do any DML operations during Sunday.
 - (ii) Design a trigger that doesn't let the minimum balance to fall below Rs. 1000/-.
 - (iii) The transaction amount is not Zero and is positive.
4. Design the database objects Synonym, Sequences, Indexes for the Bank Database.
5. Creation of Partitions for a student mark table by using range partition method.
6. Simulate a payroll processing system using PL/SQL.
7. Develop a Package incorporating simple functions and procedures for an Inventory management system.
8. Write a PL/SQL block that will display the customer name, the fixed deposit number and the fixed deposit amount of the first five customers holding the highest amount in fixed deposits.
9. Write a PL/SQL block of code that depending upon a user supplied account number, the customer to which the account belongs, the introducer of the account and the nominee of the account are inserted into the ACCT_CUST_INTRO_NOM table. If the user enters an account number that is not in the ACCT_MSTER table, then the PL/SQL block must display appropriate error message back to the user.
10. Design and develop an application for bank using VB as a front end and ORACLE as a back end Tool.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – I****CA123112****PROBLEM SOLVING AND PROGRAMMING IN 'C' LAB**

L T P C

0 0 3 2

Objective(s): *The main objective of programming in C is to develop the problem solving techniques.***LIST OF EXPERIMENTS**

1. Display the following:
 - (i) Floyd's triangle (ii) Pascal Triangle.
2. Generate the following series of numbers:
 - (i) Armstrong numbers between 1 to 100.
 - (ii) Prime numbers between 1 to 50.
 - (iii) Fibonacci series up to N numbers.
3. Manipulate the strings with following operations
 - i) Concatenating two strings.
 - ii) Reversing the string.
 - iii) To count the words and characters in a strings.
 - iv) Replacing a string.
 - v) Finding length of the string.
 - vi) Determine palindrome string.
4. Find the summation of the following series
 - (i) Sine (ii) Cosine (iii) Exponential.
5. Create the sales report for M sales persons and N products using two dimensional arrays.
6. Simulate following Banking operations using functions.
 - (i) Deposit (ii) Withdrawal (iii) Balance Enquiry.
7. Implement using recursion
 - (i) Find the solution of Towers of Hanoi problem using recursion.
 - (ii) Fibonacci number generation.
 - (iii) Factorial.
8. Implement the array using following concepts.
 - i) To find both the largest and smallest number in a list of integers.
 - ii) To perform the addition, multiplication of two matrix.
9. Write a program that implements the following concepts of function.
 - i) Function with no arguments and no return value.
 - ii) Function with no arguments but return value.
 - iii) Function with arguments but no return value.
 - iv) Functions with arguments and return value.
10. Generate Student mark sheets using structures.
11. Create a collection of books using arrays of structures and do the following
 - (i) Search a book with title and author name.
 - (ii) Sorts the books on title.
12. Perform string operations using pointers.
13. Write a program to sort the array using pointers.

(Contd...)

14. Program to implement dynamic memory allocation.
15. Create reading and displaying a sequential and random access file.
16. Program to Simulate Banking operations such as Deposit, Withdrawal & Balance Enquiry using Switch Case.
17. Write a program to create a file having the fields namely rollno, student_name, Sex (Male/Female), result (Pass /Fail) and display the following result
 - (i) List of Male Students with result.
 - (ii) List of girls with result.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – I

L T P C

0 2 0 1

HR123113

CAREER SKILLS DEVELOPMENT – I

Objective(s): *To prepare students for a promising career by inculcating soft skills and developing their Personality through activity based orientation and training sessions.*

UNIT – I CAREER AWARENESS AND PERSONALITY TRAITS

6 Hrs

Career planning – career options – importance of career planning – general awareness about the course (Engineering dept.) and opportunities – Basic life skills- Basic etiquette - Dress code – Cleanliness – manners and mannerisms- Self introduction.

UNIT – II COMMUNICATION ESSENTIALS

6 Hrs

Listening skills (Active Listening)-Voice and Accent –Body language (Non-Verbal Communication) – Pronunciation Practice (Using Interactive Software for Communication Skills in the Language lab). **(Activity)**

UNIT – III LEADERSHIP QUALITY (INCULCATION AND ENHANCEMENT)

6 Hrs

Types of Leadership – Knowing you as a leader – Challenges in leadership – Leading people – Influencing Skills-Problem Solving and Decision Making Skills.

UNIT – IV QUANTITATIVE APTITUDE-1

9 Hrs

Speed Math - HCF and LCM - Ratio and Proportions - Simplifications and Approximations - Number system- Geometry – Trigonometry – Logarithms.

UNIT – V REASONING 1

7 Hrs

Alphabet test and Series—Number series-Classification-Odd man out - Coding & Decoding - Mathematical Operations.

Total hours: 34

Text Books:

1. Communication Skills and Soft Skills: An integrated approach – E. Suresh Kumar, P. Srihari and J. Savithri – 2011 edition of Pearson Publication, New Delhi.
2. Soft Skills for Everyone – Jeff Butterfield – 2011 edition of Cengage Learning India pvt ltd, New Delhi.
3. Quantitative Aptitude for Competitive Examinations, Abhijit Guha , 4th edition, TMH.
4. Test of reasoning, Edgar Thorpe, 4th edition, TMH.

References:

1. Communicative English for Engineers and Professionals, Bhatnagar Nitin, ISBN 97881317320. 2010 edition of Pearson Publication, New Delhi.
2. Listening & Speaking-V.Sasikumar, P.Kiranmai Dutt & Geetha Rajeevan, ISBN 9788175963344, Reprint 2007 Pearson Education, New Delhi.
3. Spoken English: A Self-Learning Guide to Conversation Practice –V.Sasikumar, 2011 Edition, Tata McGraw Hill Publishing Company Limited, New Delhi.
4. Quantitative Aptitude, R.S.Agarwal,3rd edition,TMH.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – II**

L T P C

3 1 0 4

CA123201**APPLIED MATHEMATICS**

Objective(s): *To Know about Mathematical Logic, Basic Set Theory, Graph Theory, Queuing Models, Formal Languages & Finite Automata.*

UNIT – I MATHEMATICAL LOGIC**12 Hrs**

Propositions and logical operators - Truth table - Propositions generated by a set, Equivalence and implication - Basic laws - Some more connectives – Functionally complete set of connectives - Normal forms - Proofs in Propositional calculus.

UNIT – II BASIC SET THEORY**12 Hrs**

Basic Definitions - Venn Diagrams and set operations - Laws of set theory - Principle of inclusion and exclusion – partitions - Permutation and Combination – Relations - Properties of relations - Matrices of relations - Closure operations on relations - Functions - injective, surjective and bijective functions

UNIT – III GRAPH THEORY**12 Hrs**

Basic Definitions – Degree – Graph Connectivity – Euler and Hamilton Graphs - Planar Graphs – Graph Coloring

UNIT – IV FORMAL LANGUAGES**12 Hrs**

Languages and Grammars-Phrase Structure Grammar-Classification of Grammars- Pumping Lemma for Regular Languages-Context Free Languages.

UNIT – V FINITE STATE AUTOMATA**12 Hrs**

Finite State Automata-Deterministic Finite State Automata(DFA), Non Deterministic Finite State Automata (NFA)-Equivalence of DFA and NFA-Equivalence of NFA and Regular Languages

L:45,T:15,Total Hours:60

Text Books:

1. Kenneth H Rosen, “ Discrete Mathematics”, 6th Edition, Tata McGraw Hill 2009.
2. J.P.Tremblay , R.Manohar “Mathematical Structures with Applications to Computer Science” Tata McGraw Hill Edition 2002.
3. Hopcroft and Ullman, “Introduction to Automata Theory, Languages and Computation”, Narosa Publishing House, Delhi, 2002.

References:

1. Swapan Kumar Chakraborty & Bikash Kanti Sarkar, “Discrete Mathematics” Oxford University Press, 2011.
2. Taha H. A. , “Operations Research: An Introduction “ 7th Edition, Pearson Education, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – II

<u>SEMESTER II</u>		L	T	P	C
CA123202	DESIGN AND ANALYSIS OF ALGORITHMS	3	0	0	3

Objective(s): *To master the design and data structure applications of linear data structures, tree, and graph structures. To understand various algorithm design and analysis techniques*

UNIT – I INTRODUCTION 9 Hrs

Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic notations – Mathematical analysis for recursive and non-recursive algorithms.

UNIT – II DIVIDE AND CONQUER METHOD AND GREEDY METHOD 9Hrs

Divide and conquer methodology – Merge sort – Quick sort – Binary search – Binary tree traversal – Multiplication of large integers – Strassen's matrix multiplication – Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

UNIT – III DYNAMIC PROGRAMMING 9Hrs

Computing a binomial coefficient – Warshall's and Floyd' algorithm – Optimal binary search tree – Knapsack problem – Memory functions.

UNIT – IV BACKTRACKING AND BRANCH AND BOUND 9 Hrs

Backtracking – N-Queens problem – Hamiltonian circuit problem – Subset sum problem – Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

UNIT – V NP-HARD AND NP-COMPLETE PROBLEMS 9 Hrs

P & NP problems – NP - complete problems – Approximation algorithms for NP- hard problems – Traveling salesman problem – Knapsack problem.

Total hours: 45

Text Books:

1. M. A. Weiss, "Data Structures and Algorithm Analysis in C", Pearson Education, Asia, 2002.
2. Anany Levitin, "Introduction to the Design and Analysis of Algorithms, 2/E", Addison-Wesley, 2007.

References:

1. R. F. Gilberg, B. A. Forouzan, "Data Structures", Second Edition, Thomson India Edition, 2005.
2. A.V. Aho, J.E. Hopcroft, and J.D. Ullman, "Data Structures and Algorithms", Pearson Education, 1983.
3. SaraBaase and Allen Van Gelder, "Computer Algorithms - Introduction to Design and Analysis" Pearson education, 2003.
4. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Introduction to algorithms" Prentice Hall 1990.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – II**

L T P C

3 0 2 4

CA123203**OPERATING SYSTEMS**

Objective(s): *To get a comprehensive knowledge of the architecture of distributed systems, understand the deadlock and their solutions in distributed environments, to get the knowledge of failure recovery and fault tolerance to know the security issues and protection mechanisms for distributed environments, to get knowledge of multiprocessor operating system operating systems*

UNIT – I INTRODUCTION**12 Hrs**

Definition of OS - Mainframe System - Desktop Systems - Multi processor System – Distributed - Clustered - Real time Systems - Handheld Systems - Operating System Structure - System Components - Services - System Calls - System Programs - System Design and Implementation.

UNIT – II PROCESS MANAGEMENT**12 Hrs**

Concepts - Process Scheduling - Operations on Processes - Co-operating Processes - Inter Process Communication - CPU Scheduling - Scheduling Concepts - Criteria - Scheduling Algorithms - Multiprocessor Scheduling - Real time Scheduling.

UNIT – III PROCESS SYNCHRONIZATION**12 Hrs**

Critical Section - Synchronization Hardware – Semaphores - Problems of Synchronization - Critical Regions – Monitors – Deadlocks – Characterization - Handling Deadlocks - Deadlock Prevention – Avoidance – Detection - Deadlock Recovery.

UNIT – IV MEMORY MANAGEMENT**12 Hrs**

Storage Hierarchy - Storage Management Strategies – Contiguous - Non Contiguous Storage Allocation - Single User - Fixed Partition - Variable Partition – Swapping - Virtual Memory - Basic Concepts - Multilevel Organization - Block Mapping – Paging – Segmentation - Page Replacement Methods – Locality - Working Sets.

UNIT – V I/O AND FILE SYSTEMS**12 Hrs**

Disk Scheduling - File Concepts - File System Structure - Access Methods - Directory Structure – Protection - Directory Implementation - Allocation Methods - Free Space Management - Case Study: Linux System, Windows,.

Total hours: 60**Text Book:**

1. Silberschatz and Galvin, Operating System Concepts, 6th Edition, John Wiley & Sons, Inc., 2004.

References:

1. Milankovic M., Operating System Concepts and Design, 2nd Edition, McGraw Hill, 1992.
2. P.C.Bhatt, An Introduction to Operating Systems-Concepts and Practice, Prentice Hall Of India, 2004.
3. H.M.Deitel, An Introduction to Operating Systems, 2nd Edition, Pearson Education, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – II

CA123204

SYSTEM SOFTWARE

L	T	P	C
3	0	0	3

Objective(s): *To understand the relationship between system software and machine architecture.*

To know the design and implementation of assemblers

To know the design and implementation of linkers and loaders. To have an understanding of macro processors.

To have an understanding of system software tool

UNIT – I INTRODUCTION

9 Hrs

Introduction – System software and machine architecture – Machine Architectures (SIC and SIC/XE) – Data and Instruction Formats – Addressing Modes – Instruction sets – I/O Programming - RISC – CISC.

UNIT – II ASSEMBLERS

9 Hrs

Basic assembler functions – A simple SIC assembler – Assembler algorithms and data structures – Machine dependent assembler features, Instruction formats and addressing modes – Program relocation – Machine independent assembler features – Literals – Symbol-defining statements – Expressions – Program Blocks – Control Sections and Program Linking – Implementation examples MASM assembler.

UNIT – III LOADERS AND LINKERS

9 Hrs

Basic loader functions: Design of an Absolute Loader – A Simple Bootstrap Loader Machine dependent loader features Relocation – Program Linking – Algorithm and Data Structures for Linking Loader. Machine-independent loader features – Automatic Library Search – Loader Options Loader design options – Linkage Editors – Dynamic Linking –Bootstrap Loaders. Implementation examples: MSDOS linker.

UNIT – IV MACRO PROCESSORS

9 Hrs

Basic macro processor functions – Macro Definition and Expansion – Macro Processor Algorithm and data structures – Machine – independent macro processor features – Concatenation of Macro Parameters – Generation of Unique Labels – Conditional Macro Expansion – Keyword Macro Parameters – Macro Processor Design Options – Recursive Macro Expansion – Algorithm – General Purpose macro Processors – Macro Processing within Language Translators - Implementation examples: MASM Macro Processor – ANSI C macro language.

UNIT – V OTHER SYSTEM SOFTWARE

9 Hrs

Text editors – Overview of Editing Process - User Interface – Editor Structure – Interactive Debugging Systems – Debugging functions and capabilities – Relationships with Other parts of the system – User Interface Criteria.

Total hours: 45

Text Books:

1. Leland Beck - "System Software – An Introduction to Systems Programming", Third Edition, Pearson Education, Inc., 2011.

References:

1. D. M. Dhamdhare, " Systems Programming and Operating Systems", Second Edition, TataMcGraw Hill Company, 2009.
2. John J. Donovan, "Systems Programming", Tata McGraw Hill Company, 2009.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – II**

		L	T	P	C
CA123205	OBJECT ORIENTED PROGRAMMING USING C++	3	0	0	3

Objective(s): *To provide the idea about the concepts of Objects and classes.
To gain knowledge about overloading, inheritance and Polymorphism.*

UNIT – I OBJECT ORIENTED PROGRAMMING 9 Hrs

Programming paradigms - Object Oriented Programming - OOPs concept - Advantages of oops - Difference between c and c++ - Introduction to c++ - c++ Declarations - Control Structures - Arrays and Pointers.

UNIT – II CLASSES AND OBJECTS 9 Hrs

Classes and Objects - Functions in c++ - Inline functions - Friend function - passing objects to functions - Array of Objects - Static member Variable and Member functions - Pointers to Objects – Dynamic allocation Operators – working with Strings – Manipulators – typecasting – *this* pointer - Default Arguments.

UNIT – III CONSTRUCTOR AND OPERATOR OVERLOADING 9 Hrs

Constructor and Destructor – Parameterized constructor - Multiple constructor in a class - Constructor with default arguments - Copy constructor - Dynamic constructor– Overloading: Function overloading – Overloading unary operators – Overloading binary operators - Operator overloading using friend function – Assertions.

UNIT – IV INHERITANCE AND TEMPLATES 9 Hrs

Inheritance – Types of Inheritance – virtual base class - virtual functions - pure virtual functions - Templates – function template and class template.

UNIT – V APPLICATIONS WITH FILES AND EXCEPTION HANDLING 9 Hrs

Introductions – File Stream classes – Steps of File Operations - Checking for errors- Finding end of file – File opening modes- File Pointers and Manipulators – Sequential Reads and Write Operations – Random Access Operations – Error Handling Functions- Command Line Arguments – Binary & ASCII Files-Exception Handling.

Total hours: 45

Text Books:

1. D.S.Malik, "C++ Programming from problem Analysis to Program Design",2007,Third Edition.
2. Ira Pohl, "Object-Oriented Programming Using C++", Pearson Education,2008,Second Edition.

References:

1. Kamthane, "Object Oriented Programming with ANSI and Turbo C++", Pearson Education, 2009.
2. E. Balagurusamy, "Object Oriented Programming with C++", PHI, 2008, Fourth Edition.
3. Stanley B.Lijjman Josee Lajoie, "C++ Primer"2004,Fifth Edition.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – II

L	T	P	C
0	0	3	2

CA123210

ALGORITHMS LAB

Objective(s): *To develop programming skills in design and implementation of data structures and their Applications*

LIST OF EXPERIMENTS:

1. Find a recursive solution to the Tower of Hanoi Puzzle.
2. Apply the divide and Conquer technique to arrange a set of numbers using merge sort and Quick sort method.
3. Perform Strassen's Matrix multiplication using divide and conquer method
4. Create a program to find the shortest path using Dijkstra's Algorithm
5. Solve the knapsack problem using greedy method.
6. Construct a minimum spanning tree using greedy methods.
7. Construct optimal binary search trees using dynamic programming method of problem solving.
8. Perform Graph Traversals.
9. Find the solution for traveling salesperson problem using dynamic programming approach.
10. Implement the 8-Queens Problem using backtracking.
11. Implement knapsack problem using backtracking.
12. Find the solution of traveling salesperson problem using branch and bound technique.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – II**

L T P C

0 0 3 2

CA123211**SYSTEM SOFTWARE LAB****Objective(s):** *To know about the Assembler, Loader, Linker and Macro processor functions***LIST OF EXPERIMENTS**

1. Implement a symbol table with functions to create, insert, modify, search and display.
2. Implement pass one of a two pass assembler.
3. Implement pass two of a two pass assembler.
4. Implement a single pass assembler.
5. Implement a macro processor.
6. Implement an absolute loader.
7. Implement a relocating loader.
8. Implement pass one of a direct-linking loader.
9. Implement pass two of a direct-linking loader.
10. Implement a simple text editor with features like insertion/deletion of a character, word and sentence.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – II

		L	T	P	C
CA123212	OBJECT ORIENTED PROGRAMMING LAB	0	0	3	2

Objective(s): *To understand Object Oriented Programming concepts.
To implement Object Oriented features in real time applications*

LIST OF EXPERIMENTS

1. Write a C++ program for student information system using class and object.
2. Operation on Enumerated Data type
 - a. Declare an enum type DAYS to store Monday to Sunday.
 - b. Store the time table for Monday to Friday. [2D character array is sufficient]
 - c. Get the day as input from the user.
 - d. Map with the enum days type. If there is no such day , prompt the user to enter a correct data
 - e. If user enters Saturday/Sunday, display “Week end. No classes “For other inputs, display the Academic time table for the day.
3. Write a c++ program to develop the employee salary details using array of objects.
4. Create a class shape. Create the circle, rectangle, triangle, square object of the class shape and calculate the area of each type of object using overloaded function.
5. Illustration of static members and methods.
 1. Define class called “Faculty” and “Student” with relevant data members. [no public data member]
 2. In the main program “ get the choice from the user for entering the faculty details / student details “ [create appropriate objects]
 3. At the end of the program, just display the count of number of faculty and number of students details entered.
6. Write an object oriented program in c++ to read an integer number and find the sum of all digits until it reduces to a single digit using constructor and destructor.

(Contd...)

7. Unary Operator overloading [both member and friend]

- a. Create a class called „Clock’ that contains hour, min and seconds
- b. Write the constructor for initializing the time
- c. Overload ++ as member function to increment seconds [which in turn update min and hours]
- d. Overload – as non member functions to decrement seconds.
- e. Do both postfix and prefix format.
- f. Create an instance of clock.

Get the number of ticks to be incremented / decremented from the user. Accordingly update the time and display the new time.

8. Write a C++ program for add two complex numbers using Binary Operator overloading.
9. Develop an object oriented program in C++ to create a data base of the following items of the derived class.
 - a. name of the patient
 - b. sex
 - c. age
 - d. ward number 18
 - e. bed number
 - f. nature of the illness
 - g. date of admission

Design a base class consisting of the data members namely, name of the patient, sex and age. Another base class consists of ward numbers, bed number and nature of the illness. The derived class consists of the data member date of admission. Design a virtual class for the data member, namely name of the patient, sex and age.

10. Write a c++ program to implement the multi level inheritance.
11. Get the choice Integer, Float and Characters and find the maximum and minimum elements in each using templates.
12. Exception Handling: Quadratic Equation. If the roots are imaginary raise the exception.
13. Write the c++ program for employee details using files.
14. Simulate the Ms-dos command/ Unix command copy/cp using command line arguments.
15. Create an c++ project for menu driven inventory management systems using object oriented concepts.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATIONS 2012

SEMESTER – II

L T P C

0 2 0 1

HR123214

CAREER SKILL DEVELOPMENT – II

Objective(s): *To improve listening and speaking skills of students through guided active listening sessions and training sessions for improving speaking skills, using interactive software in the Language Laboratory.*

UNIT – I COMMUNICATION SKILLS

8 Hrs

Active Listening – using interactive software to learn sounds of the English language, words, phrases and expressions used in various contexts and practicing them - Pronunciation exposure & Practice - Conversation practice - Practice of conversations with and without cues, and - orientation and activities.

UNIT – II ROLE PLAY & STORY TELLING

8 Hrs

Role play – II – Exposure to situational conversations and experience of playing different roles. Listening to stories & contextual conversations – Narrative Techniques & Developing Situation – Summarizing Abilities – Tenses for Storytelling - specific Vocabulary – Body Language.

(Activity)

UNIT – III SOFT SKILLS

8 Hrs

Time Management, Stress Management, Goal Setting, Focusing Ability, Mind Mapping, Creativity & out of box thinking.

UNIT – IV QUANTITATIVE APTITUDE 2

8 Hrs

Areas – Volumes - Heights and Distances - Partnerships and shares - Profit and loss - Chain Rule - Simple interest and Compound interest - Allegation and Mixtures.

UNIT – V REASONING 2

8 Hrs

Analogies - Dice and Cubes - Arithmetic Reasoning, Seating arrangement.

Total hours: 40

Text Books:

1. Business Benchmark – Pre-Intermediate to intermediate Student's book – Norman Whitby – 2006 edition of Cambridge University Publications.
2. Face 2 Face Students Book with CD – Chris Redston – Reprint 2005, Cambridge University Press.
3. Quantitative Aptitude for Competitive Examinations, Abhijit Guha , 4th edition, TMH.
4. Test of reasoning, Edgar Thorpe, 4th edition, TMH.

References:

1. Study Speaking + CD– Second Edition 2004 – Kenneth Anderson et.al. – Cambridge.
2. Cambridge English Pronouncing Dictionary + CD– 17th edition 2006 – Daniel Jones.
3. Quantitative Aptitude, R.S.Agarwal, 3rd edition, TMH.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – III**

		L	T	P	C
CA123301	DATA COMMUNICATION AND NETWORK	3	0	0	3

Objective(s): *To provide the deep knowledge about the Communications based on transmission Media, Protocol models and finally about different layers of networks.*

UNIT – I DATA COMMUNICATIONS 09 Hrs

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies – Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT – II DATA LINK LAYER 09 Hrs

Error – detection and correction – Parity – LRC – CRC – flow Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 – IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges

UNIT – III NETWORK LAYER 09 Hrs

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT – IV TRANSPORT LAYER 09 Hrs

Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.

UNIT – V APPLICATION LAYER 09 Hrs

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography

Total hours: 45

Reference(s):

1. Behrouz A. Forouzan, "Data communication and Networking", Tata McGraw-Hill, 2007.
2. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring The Internet", Pearson Education, 2005.
3. Andrew S. Tanenbaum, "Computer Networks", PHI, Fourth Edition, 2010.
4. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATION 2012

L T P C

SEMESTER – III

3 1 0 4

CA123302

SOFTWARE ENGINEERING

Objective(s): *To understand the deep knowledge about Software and its basic concepts.
Acquire knowledge about the models and the requirements of software.
To be familiar with the designs of software and its principles
To learn the basic idea about the software testing and configuration.
To gain the exposure on managing the project*

UNIT – I SOFTWARE PROCESS

12Hrs

Introduction –Process Models :A Generic Process Model-Process Assessment and Improvement- Prescriptive Process Models - Specialized Process models- Unified process- Personal and Team Process models-Process Technology-Product and Process

UNIT – II SOFTWARE REQUIREMENTS

12Hrs

Requirement Analysis-Scenario Based Modeling-UML Models that supplement the Use Case-Data Modeling Concepts-Class Based Modeling-Requirement Modeling Strategies - Flow Oriented Modeling-Creating a Behavioral Model-Patterns.

UNIT – III DESIGN CONCEPTS AND PRINCIPLES

12Hrs

The Design process- Design Concepts-The Design Model-Architectural Design -Component level Design-User Interface Design-Pattern based design

UNIT – IV SOFTWARE TESTING

12Hrs

Strategic Approach to Software Testing-Strategic Issues-Test strategies for conventional software- Test Strategies for Object Oriented Software-Validation Testing- System Testing- The Art of Debugging- Testing Conventional Applications –Software Configuration Management.

UNIT – V SOFTWARE PROJECT MANAGEMENT

12Hrs

Project Management Concepts–Process and Project Metrics- Estimation for Software Projects: Decomposition Techniques-Empirical Estimation Models. Risk Management- Maintenance and Reengineering.

L:45 T:15, TOTAL HOURS: 60

Reference(s):

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 7th edition, 2010.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2006
3. PankajJalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997
4. James F Peters and WitoldPedrycz, "Software Engineering – An Engineering Approach", John and Sons, New Delhi, 2000

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – III****CA123303****JAVA PROGRAMMING**

L T P C

3 0 0 3

Objective(s): *To Understand the Basic Programming Concepts of Java.*
To know how to import user defined package, to create thread program and string methods
To learn about the Input/output and Networking package classes and methods
To learn about the Abstract Windowing Toolkit and Applet package classes and methods
To Understand the Basic Concepts of Remote Method Invocation, JDBC and servlet.

UNIT – I OVERVIEW OF JAVA, INHERITANCE AND METHODS 09 Hrs

Introduction- Object-Oriented Programming- Lexical Issues- Data types- Variables and Arrays – Operators – Control Statements – Objects-Classes - Inheritance – Methods –Method Overriding – Using Final with Inheritance - The Creation of Java- Java Byte code - The Java Buzzwords – Garbage Collection

UNIT – II USER DEFINED PACKAGES, THREAD PROGRAMMING AND STRING 09 Hrs

Packages – Importing Packages – Interfaces – Exception Handling – Multithreaded Programming-The String Constructors –String Handling – Character Extraction – Comparison – Modifying a String - String Buffer.

UNIT – III JAVA PACKAGES: i/o, net PACKAGE 09 Hrs

I/O Package: The Java I/O Classes and Interfaces – File – Byte Streams – The Character Streams – Serialization- Net Package: The Networking Classes and Interfaces – InetAddress – Datagrams –TCP/IP Server Sockets.

UNIT – IV JAVA PACKAGES: AWT, APPLET 09 Hrs

AWT Package: AWT Classes – Window Fundamentals – Working with Graphics– Working with Color – Working with Fonts – Applet Package: Applet Basics – Applet Architecture – Reading and Writing in Console – Print Writer class

UNIT – V SOFTWARE DEVELOPMENT USING JAVA 09 Hrs

Remote Method Invocation – JDBC – Servlets – Life Cycle of a Servlet – The Servlet API – Servlet and Http Package.

Total hours:45**Reference(s):**

1. Herbert Schildt "The Complete Reference JAVA", 7th Edition-,Tata McGraw Hill, 2007.
2. Herbert Schildt, "The Complete Reference",8th Edition-,Tata McGraw Hill, 2011.
3. Kogent, "Java 6 Programming Black Book" Edition 2011, Kogent Learning Solutions.
4. Steven Holzner, "Java2(JDK 5 Edition) Programming" 2007 edition

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – III****CA123304****INTERACTIVE COMPUTER GRAPHICS**

L	T	P	C
3	0	0	3

Objective(s): *To learn the basics of Computer Graphics*
To understand transformations in 2D and 3D graphics
Understanding techniques utilized in images and text

UNIT – I INTRODUCTION**09 Hrs**

Introduction, Application area of Computer graphics, overview of graphic system, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices-Output primitives: Points and lines, DDA and Bresenham's line drawing algorithms, mid-point circle algorithm, mid-point Ellipse Algorithm

UNIT – II 2D TRANSFORMATIONS AND VIEWING, CLIPPING CONCEPTS**09 Hrs**

2-D geometrical transformations: Translation, scaling, rotation, reflection and shear transformation matrix representations and homogeneous co-ordinates, composite transformations, transformations between coordinates- 2-D viewing : The viewing pipe-line, viewing coordinate reference frame, window to view-port co-ordinate transformations, viewing function, Cohen-Sutherland line clipping algorithms, Sutherland- Hodgeman polygon clipping algorithm

UNIT – III 3D TRANSFORMATIONS & VISIBLE SURFACE DETECTIONS TECHNIQUES**09 Hrs**

3-D geometric transformations: Translation, rotation, scaling, reflection and shear transformation and composite transformations-Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting.

UNIT – IV ANIMATION TECHNIQUES**09 Hrs**

Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation language, key frame system, motion specification.

UNIT – V INTERACTIVE GRAPHICS APPLICATIONS AND GAMES**09 Hrs**

Building Interactive Graphics Applications: The Ball Shooting Program - Programming Models - The Model view Controller Architecture - Computer Graphics in Games: Platforms - Limited Resources - Optimization Techniques - Game Types - The Game Productions Process

Total hours : 45**Reference(s):**

1. "Computer Graphics C version" Donald Hearn and M. Pauline Baker, Pearson/PHI, Seventh Impression 2008.(I Unit to IV Unit)
2. "Computer Graphics ", Peter Shirley, Steve Marschner, A K Peters Ltd, Cengage Learning India Edition, Second Indian Reprint 2010.(V Unit)
3. "Computer Graphics Second edition", Zhigang Xiang, Roy Plastock, Schaum's outlines, Tata Mc- Graw hill edition.
4. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.
5. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH
6. Principles of Computer Graphics, Shalini Govil

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATION 2012

SEMESTER – III

L	T	P	C
0	0	3	2

CA123310

NETWORKS LAB

Objective(s): *To learn socket programming and to analyze the performance of protocols in different Layers in computer networks.*

LIST OF EXPERIMENTS

1. Applications using TCP Sockets like
 - a. Echo client and echo server.
 - b. File transfer.
2. Applications using UDP Sockets like
 - a. DNS.
3. Applications using Raw Sockets like
 - a. Ping.
 - b. Trace route.
4. RPC
5. Experiments using shortest path Routing protocols
6. Sliding window Protocol
7. Development of applications such as HTTP and E-mail.
8. Sniffer
9. Development of applications such as Multiuser Chat
10. Development of applications such URL web page downloading

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – III****CA123311****JAVA PROGRAMMING LAB**

L	T	P	C
0	0	3	2

Objective(s): *To make the students clear in core java concepts***LIST OF EXPERIMENTS**

1. Write a java program to illustrate the use of Overriding.
2. To develop a java program to implement the concept of Inheritance.
3. To illustrate a java program to implement Exception Handling Mechanism.
4. Write a java program to implement String Handling Functions.
5. Create a java program for downloading WebPages
6. Write a java program to implement file operations.
7. Create a calculator using AWT controls and use event handling for calculations.
8. Write a java program for Fahrenheit to Centigradeconversion using Applet
9. To Illustrate a java program to implement Java Database Connectivity
10. Create a distributed application to download various files from various servers using RMI
11. To develop a java program to create three-tier application using servlets
-for conducting online Marketing

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATION 2012

SEMESTER – III

		L	T	P	C
CA123312	MICROPROCESSOR AND INTERACTIVE COMPUTER GRAPHICS LAB	0	0	3	2

Objective(s): *To study about the 8085 & 8086 Microprocessor Programs
To develop the graphics programming skills*

. LIST OF EXPERIMENTS

Microprocessor

1. Study of BIOS & DOS Function Call for KEYBOARD and display interfacing in MASM
2. File Manipulation using MASM
3. Ascending and Descending order using MASM Software
4. Searching an element using MASM Software
5. String Manipulation using MASM

Interactive Computer Graphics

1. To implement the concepts of 2D transformations and 2D composite transformations
2. To implement the concepts of 3D Transformations and 3D composite transformations
3. To implement the concepts of visible surface detection
4. To implement the concepts of clipping
5. To write a ball shooting game using c, the player must play using the keyboard
6. To write a snake game using c, the player must play using the keyboard
7. To write a egg catch game program using c, the player must play using the mouse

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – III**

L T P C

0 2 0 1

HR123313**CAREER SKILLS DEVELOPMENT - III**

Objective(s): *To enhance confidence, develop positive attitude and personality to make them Corporate/industry ready.*

UNIT – I COMMUNICATION SKILLS**06 Hrs**

Pattern of Communication, Management of Information, General Grammar Practice, Vocabulary Enrichment Exercise, Language Games, Pronunciation Games - **(Activity)**.

UNIT – II PRESENTATION SKILLS**06 Hrs**

Preparing & Structuring the presentation – Confidence Building – Using Visual Aids – Voice Culture – Body Language and the Art of Presentation – Audience Awareness – Question and Interruption Handling – Building and Maintaining Interest – Dealing with the Unexpected - **(Activity)**.

UNIT – III ENGLISH LANGUAGE COMPREHENSION**04 Hrs**

Listening Comprehension Tests, Reading Comprehension Tests, Speaking Exercise, Vocabulary Building Test, And Self Assessment Test.

UNIT – IV QUANTITATIVE APTITUDE III**08 Hrs**

Time and Work-Pipes and cisterns-Time and distance - Boats and Streams - Problems on Trains.

UNIT – V REASONING III**06 Hrs**

Blood Relations - Verbal Reasoning part1 - Series Completion - Venn Diagrams - Direction Sense Test.

Total hours: 30**Reference(s):**

1. Lawrence A. Pervin Ph.D (Editor), Oliver P. John PhD (Editor), "Handbook of Personality: Theory and Research", Second Edition [Paperback], the Guilford Press, 2001.
2. David R. Shaffer, "Social and Personality Development", Wadsworth Publisher, 5th Edition, 2004.
3. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations", 4th edition, TMH, 2011.
4. Edgar Thorpe, "Test of reasoning", 4th edition, TMH, 2011.
5. Quantitative Aptitude and Reasoning, R.V.Praveen, PHI, 2nd Edition, 2013.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

L T P C

3 0 0 3

CA123401**OBJECT ORIENTED ANALYSIS AND DESIGN**

Objective(s): *To learn the basic principles of objects and Object Oriented System Development Life Cycle.*
Learn to apply the Unified Modeling Language (UML) to elementary object-oriented analysis and design concepts.
UML presents the concepts and techniques necessary to effectively use system requirements to drive the development of a robust design model.
Showing how implementation details of a system can be modeled.

UNIT – I INTRODUCTION**09 Hrs**

An overview of Object Oriented Systems Development – Object basics: Object state and properties – Object Behavior & Methods – Messages – Data Abstraction - Encapsulation – Class hierarchy – Object Relationships & Associations – Aggregation – Identity – Dynamic binding – Persistence – Object oriented system development life cycle.

UNIT – II METHODOLOGIES AND UML**09 Hrs**

Introduction – Modeling Technique: Rumbaing, Booch, Jacobson methods – Patterns – Frameworks – Unified approach – Unified Modeling Language: Static and Dynamic models – UML diagrams – Class diagram – Use case diagrams – Case Study of Dynamic modeling.

UNIT – III OBJECT ORIENTED ANALYSIS PROCESS**09 Hrs**

Identifying Usecase: Business object analysis – Usecase driven object oriented analysis – Usecase model – Documentation – Classification – Identifying object- relationships- attributes and methods – Super- sub class – Case Study of Analysis Process.

UNIT – IV OBJECT ORIENTED DESIGN PROCESS**09 Hrs**

Design process – Designing classes: Class visibility – Refining attributes – Methods and protocols – Packaging and Managing – Designing interface objects: Macro and Micro level processes – Case Study of Design Process.

UNIT – V OBJECT STORAGE AND OBJECT INTEROPERABILITY**09 Hrs**

Object Store and Persistence – Database Management Systems – Distributed Databases and Client - Server Computing – Object relational systems - Object oriented databases Vs Traditional databases.

Total hours 45**Reference(s):**

1. Ali Bahrami, "Object Oriented System Development", McGraw Hill International Edition, 2008.
2. Craig Larman, "Applying UML and Patterns", 3rd Edition, Pearson, 2009.
3. Grady Booch, James Rumbaing, Ivar Jacobson, "The Unified Modeling Language User Guide", Addison Wesley Long man, 4th Edition 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

L	T	P	C
3	0	2	4

CA123402**OPEN SOURCE SOFTWARE**

Objective(s): *Overview of Free/Open Source Software.
Understanding the benefits of using PHP and MYSQL
Storing information in variables
Handling Sessions and Cookies.
Understanding how to integrate MySQL with PHP
Understanding to integrate XML with PHP*

UNIT – I INTRODUCTION**09 Hrs**

Overview of FOSS – Introduction to Linux OS-Basic Unix Commands – File Filters - File modes and Permission – Process Management – Process Authentication Modules (PAM) – Common System Configuration Files – Understanding Linux Kernel: Kernel Mode Linux (KML).

UNIT – II PHP – INTRODUCTION**09 Hrs**

PHP: Why PHP and MySQL – Learning PHP syntax and Variables – Control structures and Functions – Passing Information – String Handling – Arrays.

UNIT – III PHP – WORKING WITH COOKIES AND SESSIONS, PHP TYPES**09 Hrs**

Session : Session in PHP - Sample session code – Session Functions – Configuration Issues – Cookies: set cookie() function – Deleting cookies - Reading cookies - pitfalls – Sending HTTP headers - PHP Types : Type Round Up – Type Testing – Assignment and Conversions

UNIT – IV MY SQL DATABASE INTEGRATION**09 Hrs**

Introducing Databases and MySQL – Learning SQL – Integrating PHP and MySQL : Connecting to MySQL - Making MySQL Queries – Fetching Data Sets – Getting Data about Data – Multiple Connections – Building in Error checking – Creating MySQL database with PHP – MySQL Functions – Performing Database Queries : HTML Tables and Database Tables – Complex Mapping – Creating the sample tables.

UNIT – V CONFIGURATION AND CONNECTION**09 Hrs**

Learning PHP Configuration – Integrating PHP and XML

Total hours: [45+15] =60**Reference(s):**

1. GNU Developers B.Mahendran, "Understanding OSTC", Sai Care Publications, 2009.
2. Dr.N.B.Venkateswarlu, "Introduction to Linux : Installation and Programming", *BS Publications*, 2006, ISBN: 81-7800-113-6
3. Steve Suchring, "PHP6 and MySQL Bible", John Wiley sons, 2010, ISBN - 978-81-265-2022-0
4. Carla Schroder, Linux Cookbook, First Edition, O'Reilly Cookbooks Series, 2004
5. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

L	T	P	C
3	1	0	4

CA123403**C# AND .NET**

Objective(s): *To properly plan and code increasingly more difficult object- oriented, event-driven programs using .NET*
To create user-friendly window based and web based applications.
To build simple applications using AJAX tools in .NET and also in XML

UNIT – I .NET FRAMEWORK**12 Hrs**

.NET Architecture – Framework Base Classes and Libraries – Namespaces - Assemblies – C# .NET- Declaration – Decision – Iteration Statements, Inheritance – Operator Overloading –Errors and Exceptions – Arrays and Collections – Delegates and Events – Garbage Collection and Resource Management.

UNIT – II WINDOWS APPLICATION AND ADO.NET**12 Hrs**

Introduction – Working with Menus and Dialog boxes - Architecture of ADO.NET – Connected and Disconnected Database – Working with Data Binding and Datasets.

UNIT – III BUILDING WEB APPLICATIONS**12 Hrs**

Introduction – Web Forms Validation Controls – State Management – Data Access – Data Components and the Dataset – Data Controls.

UNIT – IV BUILDING WEB APPLICATIONS WITH AJAX EXTENSIONS**12 Hrs**

User Controls – Themes and Master Pages – Website Navigation – Resources and Localization – What is AJAX? – ASP.NET and AJAX – ASP.NET Server –side support for AJAX – AJAX Client Support – Getting familiar with AJAX – The Timer – Updating Progress – Extender Controls - Website Deployment.

UNIT – V XML AND WEB SERVICES**12 Hrs**

Introduction – Writing and Reading XML Programmatically – Displaying XML Content with XSL – XML Data Binding – XML and ADO.NET – Overview of Web Services – Web Services Standards and Protocols – Creating a Web Service – Using a Web Service – Securing Web Service

L:45 T:15, TOTAL HOURS: 60

Reference(s):

1. John Sharp, "Visual C# 2005 Step by Step ", Microsoft, Prentice Hall of India (P) Ltd., 2007(Unit 1, 2).
2. Matthew MacDonald and Mario Szpuszta, "Pro ASP.NET 2.0 in C# 2005",APress(Unit 3, 5[XML]).
3. Kathleen Kalata "Web Applications using ASP.NET 2.0", Cenage Learning, 2007 (Unit 5 [web Service]).
4. Microsoft ASP.NET 4 Step by Step, George Shepherd, PHI Learning Private Limited, 2010 (Unit [AJAX]).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

L	T	P	C
3	0	0	3

CA123404**MULTIMEDIA AND ITS APPLICATIONS**

Objective(s): *To develop the knowledge about multimedia, Image processing and compression techniques*
To know about the Multimedia file formats and its compression techniques
To learn Animation, Multimedia software and Multimedia application Development.

UNIT – I MULTIMEDIA AUTHORING AND DATA REPRESENTATIONS 09 Hrs

Introduction to Multimedia: What is Multimedia – Multimedia and Hypermedia – World Wide Web
 – Overview of Multimedia software tools – Multimedia Authoring and Tools: Multimedia authoring
 – Tools – VRML – Image data types – Popular File formats – Video and Audio representation

UNIT – II MULTIMEDIA DATA COMPRESSION 09 Hrs

Lossless Compression Algorithms – Basics of Information Theory – Run-length coding – Variable Length coding – Dictionary based coding – Arithmetic coding – Lossless image compression – Lossy Compression Algorithms – Distortion Measures – Quantization – Transform coding – Wavelet-Based coding – Set Partitioning in Hierarchical Trees (SPIHT)

UNIT – III COMPRESSION STANDARDS 09 Hrs

Image Compression - The JPEG Standard – The JPEG2000 Standard – Bi-level Image compression standards – Introduction to video compression – Video compression based on Motion compensation – H.261 – H.263 – MPEG-1 – MPEG-2 – MPEG-4 – Basics of Audio Compression Techniques – ADPCM – G.726 ADPCM – Vocoders

UNIT – IV MULTIMEDIA NETWORK COMMUNICATIONS 09 Hrs

Quality of Multimedia Data Transmission – Quality of Service – QoS for IP protocols – Multimedia over IP - IP – Multicast – RTP – RTCP – RTSP – Internet Telephony – Multimedia over ATM Networks – Transport of MPEG-4 - Media-on-Demand – Case study : C-BIRD

UNIT – V MULTIMEDIA APPLICATIONS 09 Hrs

Introduction – Media Preparation – Media Composition – Media Integration – Media Communication – Media Consumption – Media Entertainment – Trends.

Total hours: 45**References:**

1. Ze-Nian Li and Mark S. Drew, "Fundamentals of Multimedia", Pearson Education, PHI 2004.
2. Ralf Steinmetz and Klara Nahrstedt, "Multimedia Computing, Communication and Applications", Pearson Education. 2011.
3. Gerard Medioni, Parag Havaladar, "Multimedia Systems: Algorithms, Standards, and Industry Practices", Cengage Learning 2011 ISBN: 9781418835941
4. Tay Vaughan, "Multimedia: Making It Work", 8th Edition, 2011, Tata McGraw-Hill Education

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA123410	C# AND .NET WITH CASE TOOL LAB	0	0	3	2

Objective(s): *To properly plan and code increasingly more difficult object- oriented, event-driven programs using C#.*
To incorporate web programming concepts into the ASP.NET environment.
To create user-friendly screens, forms, etc. using the windows controls available in C#.
To manipulate database concept in ADO.NET.
To create simple applications using basic AJAX control on .NET.

LIST OF EXPERIMENTS

1. A bank collects an interest on 10% on loans given up to Rs.5000, 12% for loans between Rs.5001 and Rs.10000 and 15% for loans above Rs.10000. Write a Console application to find one year interest for a given amount according to the above lending policy.
2. Define a class named Amount. It should have the two variables, namely rupees and paise. It should have one method to read in the values of these two variables. Write an operator overloading method for adding two amounts. Write a method to display amount1, amount2 and total amount. Within the Main () method create the objects amount1, amount2. Make use of the operator overloading method to compute the total amount.
3. Develop a Standard Calculator widget using Windows form.
4. Create a Library Book details form and using menu items Add, Edit and Delete the book details using dialog boxes in Windows forms.
5. Create a Student details database. Use DataSet with a DataGridView Control to display the student's details in Windows forms.
6. Create an ASP.NET application to get a User name and store it Session information. Write an application to retrieve the User name stored in Session.
7. Create a simple database component using ASP.NET
8. Create a Master Page and show simple AJAX components in AJAX with ASP.NET.
9. Develop a .NET application to read and write XML data.
10. Develop a Web service

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV****CA123411****MULTIMEDIA LAB**

L	T	P	C
0	0	3	2

Objective(s): *To develop the multimedia skills***LIST OF EXPERIMENTS**

1. Image Editing using Photoshop
 - a. Color model - RGB , CMY, YUV
 - b. Cropping
 - c. Converting into different file formats
 - d. Noise reduction
2. Create an Animation using
 - a. Adobe Premiere
 - b. Dreamweaver
3. Change a circle into a square using flash.
4. Create an Animation using Flash with Action script (add required sound and video files).
5. Create a C++ Program for demonstrating data compression using
 - a. Huffman coding Algorithm
6. Create a C++ Program for demonstrating image compression using Lossy Compression algorithms.
7. Create an Animation using
 - a. Maya
 - b. 3D Studio Max
8. Create an Animation showing the animals in ZOO using Flash & Action script.
(Duration of show is 10 Minutes & use sound clips, video clips and images)
9. Develop an e-learning material using Macromedia Director. (Duration of the e-learning Material is 10 Minutes & use sound clips, video clips and images)
10. Use appropriate tool(s) from the toolbox, cut the objects from 3 files; organize them in a single file and apply feather effects using adobe Photoshop.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – IV

<u>SEMESTER – IV</u>		L	T	P	C
HR123414	CAREER SKILLS DEVELOPMENT – IV	0	2	0	1

Objective(s): *Career Development services are designed to provide individuals with career awareness, self development, and career decision making skills and to help individuals develop a realistic attitude toward the dignity of all work*

UNIT – I	GROUP DISCUSSION	06 Hrs
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Concept –Methodology –Components –Role Players –How to generate ideas –Evaluation
Techniques –Practical Suggestions - (**Activity**)

UNIT – II RESUME PREPARATION 05 Hrs

Introduction to Resume Writing - purpose – Types of resumes – Resume Writing Strategies & Techniques –Tips & Techniques for Resume Formatting & Design –The Power of Words, Structure & Positioning –Cover Letter Writing Strategies & Techniques - (**Activity**)

UNIT – III	INTERVIEW SKILLS	05 Hrs
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Types of Interviews –Interview Techniques – Preparing for an Interview – Self Introduction for Interviews - Dressing for an Interview – Overcoming Nervousness/Shyness – Body Language During Interviews –Interview Tips–FAQs – Mock Interview - (**Activity**)

UNIT – IV QUANTITATIVE APTITUDE IV 08 Hrs

Averages and Ages-Permutations and Combinations – Probability - Clocks and Calendars.

UNIT – V REASONING IV 06 Hrs

Verbal Reasoning part-2 -Syllogisms-Synonyms & Antonyms-Puzzles-Data Sufficiency.

Total hours: 30

Reference(s):

1. Trishna, "How to do well in GDs and Interviews", Third Edition, Pearson, 2013
2. Hari Mohan Prasad & Rajnish Mohan, "How to prepare for group discussion & Interview", Third Edition, McGraw Hill, 2012.
3. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations", 4th edition, TMH, 2011
4. Edgar Thorpe, "Test of reasoning", 4th edition, TMH. 2011
5. R. Edgar, "Career Satisfaction From Within by Christopher", (Free E-book)
6. R.S.Agarwal, "Quantitative Aptitude", 3rd edition, TMH, 2011

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER-V****CA 123501****INTERNET PROGRAMMING****L T P C****Objective(s):****3 1 0 4**

- To learn basic Internet Protocols.
- To know JAVA and HTML tools for Internet Programming.
- To under standard scripting languages-JavaScript
- To provide dynamic HTML programming.
- To study Server Side Programming tools.

UNIT I HTML & XML**10 Hrs**

HTML- Forms, frames, tables, simple web page design, Introduction to XML-XML versus HTML, Electronic Data Interchange(EDI),XML terminology, Introduction to DTD, Document Type Declaration, Element Type Declaration Attribute Declaration, Limitation of DTDs, Introduction to schema, complex types.

UNIT II DYNAMIC HTML**10 Hrs**

Dynamic HTML – Cascading style sheet, Java Script –Introduction, Control structure, functions, arrays, standard objects, event model, simple web page design

UNIT III JAVA SWING & BEAN**12 Hrs**

A Tour of Swing, Java Bean- Introduction, Using the Bean Developer Kit(BDK), JAR files, Introspection, Developing a simple BDk, Using Bound properties, Using the Bean Info Interface, Constrained properties, The Java Beans API, Using Bean Builder.

UNIT IV SERVER SIDE PROGRAMMING**12 Hrs**

Java Servlet and JSP, Creating and testing Servlets, Servlet Examples, Session Management, Introduction to JSP,JSP and JDBC, Apache Struts, Java Server Faces(JSF), Enterprise Java Bean (EJB), EJB Architecture-Overview, Types of EJB, Session Bean.

UNIT V SPRING AND HIBERNATE FRAMEWORKS**16 Hrs**

Spring Framework Introduction - Spring Framework Architecture – Spring IOC (Inversion of Control) - Spring and JDBC – Hibernate Framework Introduction - Hibernate Framework Architecture - Interaction of Hibernate with Database - Hibernate vs. JDBC – Spring and Hibernate.

Lecture: 45 Hrs Tutorial: 15 Hrs Total Hours: 60**TEXT BOOK(S):**

1. Achyut S Godbole & Atul Kahate, "Web Technologies- TCP/IP Architecture and Java Programming" Third edition,Ninth reprint 2013.
2. Herbert Schildt, "Java2: The Complete Reference", 8th Edition, Tata McGraw Hill, 2011.

REFERENCE(S):

1. Deital &Deital,Internet and World Wide Web – How to program, Pearson, 2011.
2. Margaret Levine Young and Doug Muder, "Internet: The Complete Reference" 1st Edition, Tata Mcgrawhill, 2011.
3. Kogent, "Java 6 Programming Black Book" Edition 2011, Kogent Learning Solution.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

		L	T	P	C
CA123502	SOFTWARE TESTING AND QUALITY ASSURANCE	3	0	0	3

Objective(s):

- To learn detail about testing fundamentals, testing management, software quality metrics, details of software quality assurance and testing projects.

UNIT – I TESTING FUNDAMENTALS**9 Hrs**

Principles of testing- Software development life cycle models-Types of testing- White box testing- Black box testing- Integration Testing –System and acceptance testing- Performance testing - Regression testing – Internalization testing – Ad hoc testing – Testing of object oriented systems – Usability and accessibility testing.

UNIT – II TEST MANAGEMENT AND AUTOMATION**9 Hrs**

Introduction – Test Planning – Test Management –Software test automation – Scope of automation – Test automation tools – Generic requirement for test tool/framework – Selecting a test tool – Challenges in automation.

UNIT – III SOFTWARE QUALITY METRICS**9 Hrs**

Software Measurement and Metrics – Measurement Theory – Software quality metrics – Product quality metrics – Software maintenance metrics – Collecting software engineering data.

UNIT – IV SOFTWARE QUALITY ASSURANCE**9 Hrs**

Software quality in business context – Planning for software quality assurance – Product quality and process quality – Software process models – ISO – Capability Maturity Model – CMMi – People CMM – Test Maturity Model.

UNIT – V TESTING PROJECTS**9 Hrs**

Managing Testing projects and groups – Legal consequences of defective software – Managing a testing group – Role of testing group.

Total Hours: 45**TEXT BOOK(S):**

- Gopalswamy Ramesh and Srinivasan Desikan, "Software Testing: Principles and Practices", Pearson Education, New Delhi, 2011.
- Nina S Godbole, "Software Quality Assurance: Principles and Practice", Alpha Science International Limited, 2004 illustrated, reprint.

REFERENCE(S):

- Glenford J Myers, Corey Sandler, Tom Badgett and Todd M Thomas, "The Art of Software Testing", Wiley, USA, 2004.
- Ilene Burnstein, "Practical Software Testing", Springer – Verlag, New Delhi, 2003.
- John D McGregor and David A Sykes, "A Practical Guide to Testing Object-Oriented Software", Addison-Wesley Professional, USA, 2001.
- Stephen H Kan, "Metrics and Models in Software Quality Engineering", Pearson Education, New Delhi, 2002.
- William E Perry, "Effective Methods for Software Testing", Wiley, New York, 2000.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER-V**

CA 123503	CRYPTOGRAPHY AND NETWORK SECURITY	L	T	P	C
		3	0	0	3

Objective(s):

- To know the methods of conventional encryption
- To understand the concepts of public key encryption and number theory
- To understand authentication and Hash functions
- To know the network security tools and applications
- To understand the system level security used

UNIT – I INTRODUCTION 7 Hrs

The need for security-security approaches-principles of security-Plain Text and Cipher Text-substitution and Transposition Techniques-Encryption and Decryption-Symmetric and Asymmetric Cryptography-Stenography-key range and key size-types of attacks

UNIT – II INFORMATION SECURITY & SYMMETRIC KEY CRYPTOGRAPHIC ALGORITHMS 9 Hrs

Information Security: An Introduction, Why information security is needed. Algorithm types and modes-overview of symmetric key cryptography- DES – IDEA - RC5 –BLOWFISH – AES

UNIT – III ASYMMETRIC KEY CRYPTOGRAPHIC ALGORITHMS 10 Hrs

Overview of asymmetric key cryptography- RSA algorithm-symmetric and asymmetric key cryptography together-digital signatures-knapsack algorithm -Public Key Infrastructure: Introduction-Digital certificates- Private Key management-PKIX model- Public Key Cryptography Standards

UNIT – IV INTERNET SECURITY PROTOCOLS 12 Hrs

Basic concepts-SSL-SHTTP-TLS-SET-SSL versus SET- 3D secure protocol -Email security-WAP security-security in GSM USER AUTHENTICATION MECHANISMS: Introduction-Authentication basics-passwords - Authentication tokens-certificate based authentication-biometrics authentication-kerberos-SSO approaches

UNIT – V NETWORK SECURITY 7 Hrs

Brief Introduction to TCP/IP- firewalls-IP security-Virtual Private Networks case studies on cryptography and security.

Total Hours: 45**TEXT BOOK(S):**

1. Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, 3rd Edition 2013.

REFERENCE(S):

1. William Stallings, "Cryptography and Network Security - Principles and Practices", Prentice Hall of India, Third Edition, 2011.
2. Bruce Schneier, "Applied Cryptography", John Wiley & Sons Inc, 2011.
3. Michael E. Whitman, Herbert J. Mattord, "Principles of Information Security", Cengage Learning India Private Limited, 4th Edition, 2012.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER-V

CA 123510

INTERNET PROGRAMMING LAB

L T P C

Objectives:

0 0 3 2

- *Understand the basic concepts of the Internet, the Web and online communication;*
- *Use ftp, socket programming and database connectivity;*
- *Create simple web pages using HTML, CSS and Interactive Web page;*

1. Write a program in Java using socket to implement HTTP request.
2. Create a web page using HTML.
3. Design a XML document to store information about a student in a college. The information must include Register Number. , Name, Name of the college, Branch, Year of Joining and e-mail id. Make up simple data for three students. Create a CSS style sheet and use it to display the document.
4. Create an XML document, which contains 10 user information. Implement a program, which takes UserId as an input and returns the user details by taking the user information from XML document.
5. Create a web page with all types of cascading style sheets using our college information
6. Client side scripts for validating web form controls using DHTML.
7. Create a Java bean to draw various graphical shapes and display it using BDK
8. Patient Information System: This software can be used to keep track of the patients' information and treatment details in a hospital or clinic. Using JSP, Servlet & JDBC.
9. Write a program java to create three-tier applications using JSP and Database for conducting on-line examination for displaying student mark list. Assume that student information is available in a database which has been stored in a database server.
10. Write a Program to implement banking operation using EJB.

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER - V****CA123511****SOFTWARE TESTING LAB**

L	T	P	C
0	0	3	2

Objective(s): *To learn the basics of testing techniques using tools.***LIST OF EXPERIMENTS**

1. Understand The Automation Testing Approach (Theory Concept).
2. Using IDE, Write a test suite containing minimum 4 test cases.
3. Conduct a test suite for any two web sites.
4. Install Selenium server and demonstrate it using a script in Java/PHP
5. Write and test a program to login a specific web page.
6. Write and test a program to update 10 student records into table into Excel file.
7. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
8. Write and test a program to provide total number of objects present / available on the page.
9. Write and test a program to get the number of list items in a list / combo box.
10. Write and test a program to count number of check boxes on the page checked and unchecked count.

Total Hours: 45**Note: Using Selenium, Test Link, Win Runner.**

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER - V

CA123512

NETWORK SECURITY LAB

L	T	P	C
0	0	3	2

Objective(s): *To develop programming skills in design and implementation of Network Security by encrypting and decrypting in different Applications.*

1. Write a program to implement Mono alphabetic cipher.
2. Write a program to implement Play Fair cipher
3. Write a program to implement Vigenere cipher (Polyalphabetic substitution)
4. Write a program for Rail Fence cipher to Implement the encryption and decryption of 8-bit data using 'Simplified DES Algorithm
5. Implement RSA algorithm for encryption and decryption '
6. Implement Diffie Hellman Key Exchange algorithm
7. Configure a mail agent to support Digital Certificates, send a mail and verify the correctness of this system using the configured parameters
8. Generate digital signature using MAC code
9. Implement the hash code using MD5
10. Write a program to retrieve the information from the system whichever is entering into our LAN (Hacking).

Total Hours: 45

Note: Using C.C++, Java,C#,.Net

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA124401	COMPILER DESIGN (ELECTIVE)	3	0	0	3

Objective(s): *To provide the idea about the concepts of Compilers.
To gain knowledge about Compiler design, code generation and optimization*

UNIT – I INTRODUCTION-LEXICAL ANALYSIS 09 Hrs

Introduction to Compiling- Compilers-Analysis of the source program-The phases- Cousins-The grouping of phases-Compiler construction tools. The role of the lexical analyzer- Input buffering- Specification of tokens-Recognition of tokens-A language for specifying lexical analyzer

UNIT – II SYNTAX ANALYSIS 09 Hrs

Syntax Analysis- The role of the parser-Context-free grammars-Writing a grammar-Top down parsing-Bottom-up Parsing-LR parsers-Constructing an SLR (1) parsing table. Type Checking- Type Systems-Specification of a simple type checker.

UNIT – III INTERMEDIATE CODE GENERATION 09 Hrs

Intermediate languages-Declarations-Assignment statements - Boolean expressions- Case statements- Back patching-Procedure calls.

UNIT – IV CODE GENERATION 09 Hrs

Issues in the design of a code generator- The target machine-Run-time storage management-Basic blocks and flow graphs- Next-use information-A simple code generator-Register allocation and assignment-The dag representation of basic blocks - Generating code from Tags.

UNIT – V CODE OPTIMIZATION 09 Hrs

Introduction-The principle sources of optimization-Peephole optimization- Optimization of basic blocks-Loops in flow graphs- Introduction to global data-flow analysis-Code improving Transformations.

Total Hours: 45

Reference(s):

1. Alfred V.Aho, Ravi Sethi Jeffrey D.Ullman, "Compilers- Principles, Techniques, and Tools", Pearson Education Asia, 2007
2. Steven S. Muchnick, "Advanced Compiler Design & Implementation", Morgan Kaufmann Polishers, 2000.
3. David Galles, "Modern Compiler Design", Pearson Education Asia, 2007
4. C. N. Fisher and R. J. LeBlanc "Crafting a Compiler with C", Pearson Education, 2000

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

CA124402	TCP/IP (ELECTIV	L	T	P	C
		3	0	0	3

Objective(s): *In-depth study of TCP/IP 5 Layers. Topics include Internet Protocols (IPv4, IPv6, ICMP), addressing (ARP), auto-configuration (DHCP), Transport Control Protocols (TCP), User Datagram Protocol (UDP), Domain Name Services (DNS), end-to-end services*

UNIT – I INTRODUCTION 09 Hrs

History –Standards – Internet – OSI model – Protocol suite – Addressing – Transmission media – Local Area and Wide Area Networks – Switching – Connecting devices – IP addressing.

UNIT – II INTERNET PROTOCOL 09 Hrs

Subnetting – Super netting – IP packets – Delivery and forwarding of IP Packets –Datagram – Fragmentation – Options-Checksum – IP over ATM-Security-IP Package– ARP –RARP-Internet control message protocol – Internet group management protocol.

UNIT – III TCP & UDP 09 Hrs

TCP services –Features-Segmentation-TCP Connection-State Transition Diagram-Windows in TCP-Flow control – Error control – Congestion Control –Timers-Package-User Datagram protocol – Services-Applications-Package

UNIT – IV APPLICATION LAYER AND CLIENT SERVER MODEL 09 Hrs

Concurrency – BOOTP – DHCP – Domain name system – Name space – Distribution – Resolution – Messages – Telnet – Rlogin –Network Virtual Terminal – Character Set – Controlling the server – Remote login.

UNIT – V APPLICATION PROTOCOLS 09 Hrs

File Transfer Protocol – Connections – Communication – Simple Mail Transfer Protocol – Simple Network Management Protocol – Hyper Text Transfer Protocol – Transaction – Request and Response messages.

Total Hours: 45

Reference(s):

1. Behrouz A. Forouzan, "TCP/IP Protocol Suite", Tata McGraw Hill Edition, 2010.
2. Douglas E. Comer, David L. Stevens, "Internetworking with TCP/IP – Volume I, II and III", Prentice-Hall of India Pvt. Ltd., 2nd Edition 2005.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATION 2012

SEMESTER – IV

CA124404	COMPONENT BASED TECHNOLOGY	L	T	P	C
	(ELECTIVE)	3	0	0	3

Objective(s): *Introduce in depth of JAVA, CORBA and .Net Components.
To have a clear understanding of Software components, component architecture and middleware
To study the Component Frameworks and Development.*

UNIT – I INTRODUCTION 09 Hrs
Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware

UNIT – II JAVA COMPONENT TECHNOLOGIES 09 Hrs
Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and RMI – IIOP

UNIT - III CORBA TECHNOLOGIES 09 Hrs
Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – application server – model driven architecture.

UNIT – IV COMAND .NET TECHNOLOGIES 09 Hrs
COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components - assemblies – appdomains – contexts – reflection – remoting.

UNIT – V COMPONENT FRAMEWORKS AND DEVELOPMENT 09 Hrs
Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools.

Total Hours: 45

Reference(s):

1. Clemens Szyperski, "Component Software Beyond Object, Oriented Programming", Addison Wesley, 2nd Edition 2007.
2. Ed Roman, "Enterprise Java Beans", Third Edition, Wiley, 2005.
3. Gerald Brose, Andreas Vogel, Keith Duddy, "Java Programming with CORBA", Third Edition, John Wiley & Sons 2001.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA124405	NETWORK ADMINISTRATION (ELECTIVE)	3	0	0	3

Objective(s): *To learn about the concepts of OSI reference model and protocol architecture
Focuses on network design and the proper way to design an internetwork.
To understand SONET and ISDN
To learn about the Fiber optics and Voice Technology
To provide the deep knowledge about IP technology and wireless WAN Students will gain a solid background on networking protocols, architecture design.*

UNIT – I ISO REFERENCE MODEL AND FRAME RELAY WAN PROTOCOLS 09 Hrs

OSI reference model-standard organizations-Layer 3 switching: Approaches to layer 3 switching-Aspects of layering- Relieving network congestion-WAN architecture-protocol architecture-Frame relay wan protocol: Introduction to frame relay-frame relay virtual circuits-Data flow in frame relay FECN and BECN-Frame relay network implementation

UNIT – II ETHERNET TECHNIQUES 09 Hrs

GIGABIT Ethernet and fast Ethernet: Introduction to Gigabit Ethernet-An alternate to high speed transmission-Quality of service on Ethernet-Introduction to fast Ethernet-Network design criteria for fast Ethernet-Troubleshooting techniques for fast Ethernet-Encoding.

UNIT – III SONET AND ISDN 09 Hrs

SONET: SONET architecture and protocols-SONET overhead- super rate payloads in SONET- ISDN and B-ISDN: Introduction to ISDN: How does ISDN work-ISDN standards-ISDN evaluation-ATM: ATM network operation-multicasting in ATM-ATM signaling and addressing-TCP/IP: Introduction to TCP/IP-How does TCP/IP work-IP addressing-RSVP.

UNIT – IV FIBER OPTICS AND VOICE TECHNOLOGY 09 Hrs

Fiber optics and testing: Fiber optics cables-Types of fiber optics-understanding OTDR testing-Voice technologies: Introduction-Voice over IP-current and future telephony trends-LAN protocol architecture: protocols and communication architecture-Understanding token passing-Dense wave division multiplexing: Today's telecommunication network challenge-Resolving the capacity crisis-Capacity expansion potential –DWDM technology

UNIT – V IP TECHNOLOGY AND WIRELESS WAN 09 Hrs

Future trends in IP technology: IP-over –SONET-backbone architecture-Tunneling with virtual private networks-Wireless LAN: What is a wireless LAN-wireless LAN technology-Line-of-sight/Fresnel Zone-Considerations for selecting a wireless LAN solution. Simple Network Management Protocol –SNMP message format –Example encoded SNMP message –New features in SNMPv3.

Total Hours: 45

Reference(s):

1. Steve Wisniewski, "Network Administration ", Pearson Education, 2007
2. Steven Graham, Steve Shah, "LINUX Administration A beginner's Guide", 3rd Edition, McGraw Hill, 2002
3. Nicholas wells, "Guide to Linux Installation and administration", Vikas Publishing house, 2000
4. Craig Hunt, "TCP / IP Network Administration", 3rd Edition, O'Reilly Networking, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV****CA124406****SOFTWARE PROJECT MANAGEMENT
(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s): *To learn the basic idea about the software project management and its planning activities.*
To know about the project evaluation concepts and software estimation.
To get the role of software developers in getting exposure on software quality and risk management.
To be familiar with the project management process and its activities.

UNIT – I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT 09 Hrs
 Product life cycle: Introduction-Idea Generation-prototype Development Phase-Alpha phase-Beta phase-Production phase-Maintenance and obsolescence phase. Product life cycle models: The Waterfall model-The prototyping model-The Rapid Application Development (RAD) Model-Spiral model and its variants. Process Models: The ISO-9001 Model-The capability Maturity model

UNIT – II SOFTWARE METRICS & SOFTWARE CONFIGURATION MANAGEMENT 09 Hrs
 Software metrics: Introduction-The Metrics Roadmap-A Typical Metrics Strategy-What to Measure-Set targets and track them-Understanding and trying to Minimize Variability-Act on data-People and organizational Issues in metrics programs-Common pitfalls to watch out for in metrics programs –Metrics Implementation checklists and tools. Software Configuration Management: Introduction-Definitions and terminology-The process and activities of SCM- Configuration status accounting-Configuration audit-Metrics in SCM-SCM tools and automation.

UNIT – III SOFTWARE QUALITY ASSURANCE & RISK MANAGEMENT 09 Hrs
 Software Quality assurance: software quality-Quality important in software-Quality control and quality assurance-Cost and benefits of quality-Software quality analyst's functions-Misconceptions about the SQA role-Software quality assurance tools- Organizational structures-Profile of a successful SQA-Measure of SQA success-Pitfalls of SQA. Risk Management: Introduction- Risk management and its important. Risk management cycle-Risk Identification-Risk Quantification-Risk Monitoring-Risk mitigation-Practical Techniques and metrics in Risk management.

UNIT – IV PROJECT MANAGEMENT PROCESS AND ACTIVITIES 09 Hrs
 Project life cycle: In-Stream Activities-Project initiation: Activities during project initiation-Outputs, Quality record and Project initiation phase-Interface to the process database. Project planning and tracking: Components of project planning and tracking-Project closure: Issues and Metrics for project closure.

UNIT – V ENGINEERING ACITIVITIES IN PROJECTS 09 Hrs
 Software requirements gathering. Estimation: Phases of estimation-Estimation methodology-Size estimation effort and schedule estimates. Design and Development phases-Features of design: Project management in testing phase: Project management in the maintenance phase

Total Hours: 45**Reference(s):**

1. Gopalaswamy Ramesh, "Managing Global Software Projects", Tata McGraw Hill, 2005.
2. Bob Hughes, Mikecoterrell, Rajib Mall, "Software Project Management", Fifth Edition, Tata McGraw Hill, 2011.
3. Walker Royce, "Software Project Management", Pearson Education, 2005.
4. Pankoj Jalote, "Software Project Management in Practice", Pearson Education, 2002

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

L T P C

3 0 0 3

CA124407**DATABASE TECHNOLOGIES (ELECTIVE)**

Objective(s): *To get a comprehensive knowledge of the advance database systems, to understand the distributed, Object Oriented & Relational Database design, to learn data models & their use in high end applications, and to know the current issues in databases.*

UNIT – I DATABASE SYSTEM DESIGN 09 Hrs
 File and Storage Structures – Physical Database Design and Tuning – Transaction Processing Concepts – Concurrency Control Techniques – Database Recovery Techniques – Security and Integrity.

UNIT – II DISTRIBUTED DATABASES 09 Hrs
 Centralized versus Distributed Databases – Distributed Database Concepts – Advantages of Distributed Databases – Additional Functions of Distributed Databases – Fragmentation and Replication Techniques – Types of Distributed Databases – Distributed Database Architecture – Concurrency Control and Recovery Techniques in Distributed Databases – Client/Server Architecture.

UNIT – III OBJECT ORIENTED AND RELATIONAL DATABASES 09 Hrs
 Introduction to Object Oriented Concepts – Overview of the Object Model of Object Data Management Group – Object Definition Language – Object Query Language – Object Database Conceptual Design – Nested Relational Model – Functional Dependencies and Normalization for Relational Databases – Relational Database Design Algorithms.

UNIT – IV ENHANCED DATA MODELS FOR ADVANCED APPLICATIONS 09 Hrs
 Enhanced Data Models – Web Databases – Design of Temporal Databases – Incorporating Time in Relational Databases – Incorporating Time in Object Oriented Databases – Temporal Querying Constructs – Time Series Data – Spatial Databases

UNIT – V CURRENT ISSUES 09 Hrs
 Active Database Concepts – Introduction to Deductive Databases – Clausal Form and Horn Clauses – Interpretations of Rules – Use of Relational Operations – Multimedia Databases – The Nature of Multimedia Data and Applications.

Total Hours : 45**Reference(s):**

1. Henry F Korth, Abraham Silberschatz, S. Sudharshan, "Database System Concepts", 8th Edition, McGraw Hill, 2011.
2. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Pearson Education, 5th Edition, 2011.
3. Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", McGraw Hill, Third Edition 2004.
4. C.S.R Prabhu, "Object-Oriented Database Systems", Prentice Hall Of India, 2011.
5. N.Tamer Ozsu, Patrick Valduriez, "Principles of Distributed Database Systems", 3rd Edition springer, 2011

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA124408	ADVANCED OPERATING SYSTEMS (ELECTIVE)	3	0	0	3

Objective(s): *To get a comprehensive knowledge of the architecture of distributed systems, to understand the deadlock and their solutions in distributed environments, to get the knowledge of failure recovery and fault tolerance, to know the security issues and protection mechanisms for distributed environments, and to learn multiprocessor operating systems.*

UNIT – I DISTRIBUTED OPERATING SYSTEMS 09 Hrs
Architectures of Distributed Systems - System Architecture types - Issues in distributed operating systems - communication networks - communication primitives. Distributed Dead Lock Detection - Introduction - deadlock handling strategies in distributed systems - issues in deadlock detection and resolution - control organizations for distributed deadlock detection.

UNIT – II DISTRIBUTED RESOURCE MANAGEMENT 09 Hrs
Distributed File Systems – Mechanisms for Building Distributed File Systems – Design Issues – Distributed Shared Memory – Design Issues : Distributed Scheduling – Issues in Load Distributing – Components of a Load Distributing Algorithm – Load Distributing Algorithms – Selecting a Suitable Load Sharing Algorithm – Requirements for Load Distributing.

UNIT – III FAILURE RECOVERY AND FAULT TOLERANCE 09 Hrs
Recovery – Basic Concepts – Classification of Failures – Backward and Forward Error Recovery – Backward-Error Recovery : Basic Approaches – Recovery in Concurrent Systems – Fault Tolerance – Issues – Atomic Actions and Committing – Commit Protocols – Non blocking Commit Protocols – Voting Protocol

UNIT – IV PROTECTION AND SECURITY 09 Hrs
Protection and security -preliminaries, the access matrix model and its implementations.-safety in matrix model- advanced models of protection. Data security - cryptography: Model of cryptography, conventional cryptography- modern cryptography, private key cryptography, data encryption standard- public key cryptography - multiple encryptions.

UNIT – V MULTIPROCESSOR OPERATING SYSTEMS 09 Hrs
Multiprocessor operating systems - basic multiprocessor system architectures - inter connection networks for multiprocessor systems - caching - hypercube architecture - structures of multiprocessor operating system-operating system design issues.

Total Hours: 45

Reference(s):

- 1.Mukesh Singhal, Niranjana G.Shivaratri, "Advanced concepts in operating systems: Distributed, Database and multiprocessor operating systems", Tata McGraw-Hill Edition 2007.
2. Andrew S.Tanenbaum, "Modern operating system", PHI, 2003
3. Pradeep K.Sinha, "Distributed operating system-Concepts and design", PHI, 2003.
4. Andrew S.Tanenbaum, "Distributed operating system", Pearson education, 2003

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA124409	ORGANIZATIONAL BEHAVIOUR (ELECTIVE)	3	0	0	3

Objective(s): *The objective of this course is to introduce theories and concepts related to understanding people's behavior in organizations. Students will study the behavior of individuals and groups within organizations in order to gain both a theoretical understanding as well as practical knowledge that can be applied in a work setting. Understand the concept of leadership, leadership styles and their power. Explore the relationships among the various components of organizational behavior and their effectiveness.*

UNIT – I INTRODUCTION 09 Hrs
Organizational behavior: Definition – Meaning – Scope & Importance of OB – OB Model. Management and Managers: Functions – Skills – Roles – Types of Managers.

UNIT – II INDIVIDUAL BEHAVIOUR 09 Hrs
Personality: Theories – Types. Learning: Meaning and Definition – Theories of Learning. Attitudes: Nature – Components – Formation – Functions – Measurement. Perception: Factors influencing perception. Motivation: Importance – Theories (Maslow's Hierarchy Theory & Herzberg Theory) – Types – Effects on work behavior

UNIT – III GROUP BEHAVIOUR 09 Hrs
Nature – Types – Group Development – Group behavior – Structuring. Group Decision making Techniques. Team dynamics: Nature of teams – Teams Vs Groups – Benefits from teams – Types of teams – Team issues – Effective team work.

UNIT – IV LEADERSHIP AND POWER 09 Hrs
Leadership: Meaning – Importance – Leadership Styles – Theories. Power: Power dynamics – Sources of power – Effective use of power.

UNIT – V DYNAMICS OF ORGANIZATIONAL BEHAVIOUR 09 Hrs
Organization culture and climate: Factors affecting organizational culture & climate. Organizational change: Importance – the change process – Resistance of change – Managing change. Job satisfaction: Determinants – Measurements. Stress: Prevention and management of stress – Balancing work and life.

Total Hours: 45

Reference(s):

1. Aswathappa.K, Organizational Behaviour, Himalaya Publishing House, 10th Revised Edition, 2012.
2. Stephen P Robbins "Organizational Behaviour", PHI, 13th Edition, 2010.
3. Mohini Sukhapure & Uday N.Limaye "Organizational Behaviour", HJimalaya Publishing Private Limited, 2010.
4. P.Subba Rao "Organizational Behaviour (Text, Cases and Games)"K, Himalaya Publishing Private Limited, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATIONS 2012****SEMESTER – IV**

CA124410	OPERATIONS RESEARCH (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s): *To learn the concepts and applications of the Linear Programming Problem, Transportation Problem, Assignment Problem, Integer programming problems, Dynamic programming problems, Scheduling by PERT and CPM and Queuing Theory.*

UNIT – I LINEAR PROGRAMMING PROBLEMS 9 Hrs

Mathematical Formulation of Linear programming problems - Graphical Solutions - Simplex method using slack variables- simplex method using artificial and surplus variables(Two-phase method and Big-M method)- Dual simplex method.

UNIT – II TRANSPORTATION AND ASSIGNMENT PROBLEMS 9 Hrs

Mathematical formulation of transportation problem- Methods for finding initial basic feasible solution – optimum solution - degeneracy – Travelling salesman problems. Mathematical formulation of assignment problems – Hungarian Algorithm – unbalanced, minimization and maximization problems.

UNIT - III INTEGER AND DYNAMIC PROGRAMMING PROBLEMS 9 Hrs

Gomory's all-integer cutting plane method - Gomory's mixed integer method – Branch and bound technique. Dynamic Programming Problem using Bellman's principle of optimality – Dynamic programming approach for solving linear programming problems.

UNIT – IV PROJECT SCHEDULING BY PERT AND CPM 9 Hrs

Network Construction – Critical Path Method – Project Evaluation and Review Technique – Resource Analysis in Network Scheduling.

UNIT – V QUEUEING THEORY 9 Hrs

Characteristics of Queuing Models – Poisson Queues - $(M / M / 1) : (FIFO / \infty / \infty)$, $(M / M / 1) : (FIFO / N / \infty)$, $(M / M / C) : (FIFO / \infty / \infty)$, $(M / M / C) : (FIFO / N / \infty)$ models.

Total Hours: 45

Reference(s):

1. Kanti Swarup, P.K.Gupta, Manmohan "Operations Research ", Sultan Chand & Sons Reprint 2010.
2. Hamdy A. Taha, "Operations Research: An Introduction, 9/e ", Pearson Education, 2012.
3. Operations Research, A. M. Natarajan , P. Balasubramanie, A Tamilarasi, Pearson Education,2012.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**REGULATION 2012****SEMESTER – IV**

		L	T	P	C
CA124411	ARTIFICIAL INTELLIGENCE (ELECTIVE)	3	0	0	3

Objective(s): *This subject deals with various AI Concepts and Methodologies.
To Acquire Knowledge on various AI Techniques and Expert Systems.
To have enriched knowledge regarding heuristic search, Knowledge representation and Expert systems.*

UNIT – I INTRODUCTION 09 Hrs

Intelligent Agents – Agents and environments – Good behavior – The nature of environments – structure of agents – Problem Solving – problem solving agents – example problems – searching for solutions – uniformed search strategies – avoiding repeated states – searching with partial information.

UNIT – II SEARCHING TECHNIQUES 09 Hrs

Informed search strategies – heuristic function – local search algorithms and optimistic problems – local search in continuous spaces – online search agents and unknown environments – Constraint satisfaction problems (CSP) – Backtracking search and Local search – Structure of problems – Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning – imperfect real-time decision – games that include an element of chance.

UNIT – III KNOWLEDGE REPRESENTATION 09 Hrs

First order logic - syntax and semantics – Using first order logic – Knowledge engineering – Inference – prepositional versus first order logic – unification and lifting – forward chaining – backward chaining – Resolution – Knowledge representation – Ontological Engineering – Categories and objects – Actions – Simulation and events – Mental events and mental objects.

UNIT – IV LEARNING 09 Hrs

Learning from observations – forms of learning – Inductive learning - Learning decision trees – Ensemble learning – Knowledge in learning – Logical formulation of learning – Explanation based learning – Learning using relevant information – Inductive logic programming - Statistical learning methods – Learning with complete data – Learning with hidden variable – EM algorithm – Instance based learning – Neural networks – Reinforcement learning – Passive reinforcement learning – Active reinforcement learning – Generalization in reinforcement learning.

UNIT – V APPLICATIONS 09 Hrs

Communication – Communication as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction – Probabilistic language processing – Probabilistic language models – Information retrieval – Information Extraction – Machine translation

Total Hours: 45**Reference(s):**

1. Artificial Intelligence a modern Approach “– Stuart Russell & Peter Norvig, 2nd Edition
Perason Education, 2011.
2. Elaine rich and Kelvin Knight, “Artificial Intelligence “, Tata McGrawhill Publication, 3rd Edition, 2008.
3. “Artificial Intelligence “, George F Luger, 5th Edition, Pearsons Education Publ, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

REGULATION 2012

SEMESTER – IV

<u>SEMESTER – IV</u>		L	T	P	C
CA124412	UNIX INTERNALS (ELECTIVE)	3	0	0	3

Objective(s): *To get a comprehensive knowledge of the architecture of Unix Operating Systems, to understand the IPC, Kernels, Process and Memory Management mechanisms for Unix environments*

UNIT – I	INTRODUCTION TO UNIX	09 Hrs
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Unix operating System – History – Commands – System Structures – Shell, Shell Programming – System/Calls – Unix Communications.

UNIT – II UNIX KERNALS 09 Hrs

Architectures – Kernel data structures – File sub – system and process – sub- system – User – Kernel modes – Process states and transitions – Sleep and Wakeup

UNIT – III FILE SYSTEMS 09 Hrs

Buffers – Structures and representater – Implementation of System calls

UNIT – IV PROCESSES AND MEMORY MANAGEMENT 09 Hrs

Structure – Context – Address space – Creation – Termination – Scheduling – Threads –
Implementation of system calls, Swapping – Segmentation – Demand Paging

UNIT – V I/O SUBSYSTEM AND IPC 09 Hrs

Drivers – Streams – Implementations of IPC Mechanism

Total Hours: 45

Reference(s):

1. Bach M.J., The Design of Unix Operating System, Prentice Hall India, 1986
2. Sumitabha Das, Unix Concepts and Applications, TMH 2002
3. B.W. Kernigham, Rob Pike, Unix Programming Environment, PHI, 1999
4. Goodheart B., Cox.J., The Magic Garden Explained, Prentice Hall India, 1994
5. Leffer S.J., Mckusick M.K., Karels M.J and Quarterman J.S., The Design and Implementation the 4.3 BSD Unix Operating System, Addison Wesley, 1998

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATIONS 2012****SEMESTER – V**

CA124501	SOFT COMPUTING (ELECTIVE)	L	T	P	C
Objective(s):		3	1	0	4
	<ul style="list-style-type: none"> To learn the key aspects of Soft Computing and Neural networks To learn the Fuzzy logic components To gain insight onto Neuro Fuzzy modeling and control To gain knowledge in machine learning through Support vector machine 				
UNIT I	INTRODUCTION TO SOFT COMPUTING AND NEURAL NETWORKS				12Hrs
	Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics				
UNIT II	GENETIC ALGORITHMS				12Hrs
	Introduction to Genetic Algorithms (GA) – Applications of GA in Machine Learning - Machine Learning Approach to Knowledge Acquisition.				
UNIT III	NEURAL NETWORKS				12Hrs
	Machine Learning Using Neural Network, Adaptive Networks – Feed forward Networks Supervised Learning Neural Networks – Radial Basis Function Networks -Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance architectures – Advances in Neural networks.				
UNIT IV	FUZZY LOGIC				12Hrs
	Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions- Fuzzy Rules and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.				
UNIT V	NEURO-FUZZY MODELING				12Hrs
	Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rule base Structure Identification – Neuro-Fuzzy Control .				

Lecture: 45 Tutorial: 15 Total Hours: 60**TEXT BOOK(S):**

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, "Neuro-Fuzzy and Soft Computing", Prentice-Hall of India, 2012.
2. George J. Klir and Bo Yuan, "Fuzzy Sets and Fuzzy Logic-Theory and Applications", Prentice Hall, 1995.
3. James A. Freeman and David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques", Pearson Edition., 2003.

REFERENCE(S):

1. Mitchell Melanie, "An Introduction to Genetic Algorithm", Prentice Hall, 1998.
2. David E. Goldberg, "Genetic Algorithms in Search, Optimization and Machine Learning", Addison Wesley, 1997.
3. S. N. Sivanandam, S. Sumathi and S. N. Deepa, "Introduction to Fuzzy Logic using MATLAB", Springer, 2007.
4. S.N.Sivanandam · S.N.Deepa, "Introduction to Genetic Algorithms", Springer, 2007.
5. Jacek M. Zurada, "Introduction to Artificial Neural Systems", PWSPublishers, 1992.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER – V

CA124502	DIGITAL IMAGE PROCESSING (ELECTIVE)	L	T	P	C
Objective(s):		3	1	0	4

- To give the knowledge of effectively storing images,
- To extract interesting patterns from an image,
- To discriminate between different classes of images,
- To give mathematical fundamentals for image processing.
- To lead the confidence in developing image-processing applications.

UNIT – I FUNDAMENTALS OF IMAGE PROCESSING AND IMAGE TRANSFORMS 12Hrs

Introduction – Steps in Digital Image Processing – Image sampling and Quantization – Basic relationships between pixels – Color Fundamentals – File Formats – Image Transforms: DFT, DCT, Haar, SVD and KL- Introduction to Mat lab Toolbox.

UNIT – II IMAGE ENHANCEMENT AND IMAGE RESTORATION 12Hrs

Image Enhancement in the Spatial Domain: Basic Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic/Logic Operations, Spatial Filtering – Image Enhancement in the Frequency Domain: Frequency Domain Filters - Image Restoration: Model of Image Degradation/Restoration Process, Noise Models, Restoration by Spatial and Frequency Domain Filtering.

UNIT – III MULTI RESOLUTION ANALYSIS AND IMAGE COMPRESSION 12Hrs

Multi Resolution Analysis: Image Pyramids – Multi resolution expansion – Wavelet Transforms. Image Compression: Fundamentals – Models – Elements of Information Theory – Error Free Compression – Lossy Compression – Compression Standards.

UNIT – IV IMAGE SEGMENTATION AND DESCRIPTION 12Hrs

Image Segmentation: Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region Based Segmentation, Basic Morphological Algorithms, Morphological WaterSheds - Description: Boundary Descriptors, Regional Descriptors.

UNIT – V CURRENT TRENDS AND APPLICATIONS OF IMAGE PROCESSING 12Hrs

Applications: Image Classification, Object Recognition, Image Fusion, Steganography – Current Trends: Color Image Processing, Wavelets in Image Processing.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. S.Jayaraman, S.Esakirajan and T.Veerakumar,"Digital Image Processing", McGraw Hill Edition, 2011.
2. Rafael C.Gonzalez and Richard E.Woods, "Digital Image Processing", Pearson Education, 3rd Edition, 2008.
3. S. Sridhar, "Digital Image Processing", Oxford University Press, 2011.

REFERENCE(S):

1. Milan Sonka, Vaclav Hlavac and Roger Boyle, "Image Processing, Analysis and Machine Vision", 2nd Edition, Thomson Learning, 2001.
2. Anil K.Jain, "Fundamentals of Digital Image Processing", PHI, 2006.
3. Sanjit K. Mitra, & Giovanni L. Sicuranza, "Non Linear Image Processing", Elsevier, 2007.
4. Rafael C.Gonzalez, Richard E.Woods, and Eddins, "Digital Image Processing Using MATLAB",
5. Tata McGraw-Hill, 2nd Edition, 2009.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V****CA124503 HIGH SPEED NETWORKS (ELECTIVE)**

L T P C

Objectives:

3 1 0 4

- Understand the concept of ATM and Frame relay.
- Analyze the up-to-date survey of developments in High Speed Networks.
- Observe the techniques involved to support real-time traffic and congestion control.
- Distinguish the different levels of quality of service (QoS) to different applications.

UNIT I INTRODUCTION**12Hrs**

Frame Relay Networks–Asynchronous transfer mode–ATM Protocol Architecture - ATM logical Connection–ATM Cell–ATM Service Categories–AAL. High Speed LAN's: Fast Ethernet–Gigabit – Ethernet–Fiber Channel–Wireless LAN's.

UNIT II CONGESTION AND TRAFFIC MANAGEMENT**12Hrs**

Queuing Analysis- Queuing Models–Single Server Queues–Effects of Congestion – Congestion Control – Traffic Management – Congestion Control in Packet Switching Networks–Frame Relay Congestion Control.

UNIT III TCP AND ATM CONGESTION CONTROL**12Hrs**

TCP Flow control–TCP Congestion Control–Retransmission–Timer Management–Exponential RTO backoff–KARN's Algorithm–Window Management–Performance of TCP over ATM. Traffic and Congestion control in ATM–Requirements–Attributes–Traffic Management Framework, Traffic Control–ABR Traffic Management–ABR rate control, RM cell formats, ABR Capacity allocations – GFR Traffic Management.

UNIT IV INTEGRATED AND DIFFERENTIATED SERVICES**12Hrs**

Integrated Services Architecture–Approach, Components, Services Queuing Discipline, FQ, PS, BRfq, GPS, WFQ Random Early Detection, and Differentiated Services.

UNIT V PROTOCOLS FOR QoS SUPPORT**12Hrs**

RSVP–Goals & Characteristics, Data Flow, RSVP Operations, Protocol Mechanisms–Multiprotocol Label Switching–Operations, Label Stacking, Protocol details–RTP–Protocol Architecture, Data Transfer Protocol, RTCP.

Lecture: 45 Tutorial: 15 Total Hours: 60**TEXT BOOK(S):**

1. William Stallings, "High Speed Networks and Internet", Pearson Education, 2nd Edition, 2002.

REFERENCE(S):

1. Warland & Pravin Varaiya, "High Performance Communication Networks", Jean Harcourt Asia Pvt. Ltd., II Edition, 2001.
2. Irvan Pepelnjk, Jim Guichard and Jeff Apcar, "MPLS and VPN architecture", Cisco Press, Volume 1 and 2, 2003.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER – V

CA124504	ARTIFICIAL AND NEURAL NETWORKS (ELECTIVE)	L	T	P	C
		3	1	0	4

Objective(s):

- *To search and describe the basic behavior of Neurons*
- *To aware of the basis of the Artificial Neural Networks*
- *To understand the Learning Process*
- *To describe the perception functioning*
- *To understand the radial-basis function Networks and describe the Self-Organizing Maps*

UNIT I INTRODUCTION TO ARTIFICIAL NEURAL NETWORKS 12Hrs

Introduction-General characteristics of human brain-Artificial neural Network-Benefits of the artificial neural networks-Applications of the ANN-Computational model of the neuron-Structure of a neural net (topology).

UNIT II LEARNING PROCESS 12Hrs

Introduction-Supervised learning-Error correction learning-Reinforcement of learning-Stochastic learning-Unsupervised learning-Hebbian learning-Competitive learning.

UNIT III PERCEPTION 12Hrs

Introduction-Convergence Theorem of the Perception-Virtues and limitations-Adaline and Madaline-Multilayer Perception- Algorithm of Back propagation-Learning rate and momentum-Algorithms of Second order-Pruning.

UNIT IV RADIAL-BASIS FUNCTION NETWORKS 12Hrs

Cover's theorem – Interpolation problem-Regularization theory-XOR problem-Comparison of RBF Networks and Multilayer Perceptions – Kernel Regression-Learning Strategies-Computer Experiment.

UNIT V SELF-ORGANIZING MAP 12Hrs

Introduction-Topology-Learning Rule-Operation stage of SOM Network-Geometrical interpretation-Hierarchical Vector Quantization-Contextual Maps.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. Haykin, S., "Neural Networks: A Comprehensive foundation", Pearson Education, 2nd Edition, 2006.

REFERENCE(S):

1. S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, 3rd Edition, 2009.
2. James A. Anderson, "An Introduction to Neural Networks", Prentice Hall, 2002.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

CA124505	DATA MINING AND DATA WAREHOUSING (ELECTIVE)	L	T	P	C
		3	1	0	4

Objective(s):

- *To learn the basic fundamentals of data warehousing and data mining.*
- *Students are exposed to data preprocessing techniques and data mining functionalities and query language.*
- *To build knowledge with Association Rules for Transactional databases.*
- *An understanding various classification and prediction methods.*
- *To Know about Mining Object, Spatial, Multimedia, Text and Web Data.*

UNIT I DATA WAREHOUSING AND BUSINESS ANALYSIS 12Hrs

Data warehousing Components –Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools –Metadata – reporting – Query tools and Applications – Online Analytical Processing (OLAP) – OLAP and Multidimensional Data Analysis.

UNIT II DATA MINING 12Hrs

Data Mining Functionalities – Data Preprocessing: – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. Association Rule Mining: - Efficient and Scalable Frequent Item set Mining Methods - Mining Various Kinds of Association Rules – Association Mining to Correlation Analysis – Constraint-Based Association Mining.

UNIT III ISSUES REGARDING CLASSIFICATION AND PREDICTION 12Hrs

Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Ensemble Methods – Model Section.

UNIT IV CLUSTER ANALYSIS 12Hrs

Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Constraint-Based Cluster Analysis – Outlier Analysis.

UNIT V MINING OBJECT, SPATIAL, MULTIMEDIA, TEXT AND WEB DATA 12Hrs

Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S)

1. Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, 25th Reprint 2012.
2. Jiawei Han and Micheline Kamber "Data Mining Concepts and Techniques" 2nd Edition, Elsevier, Reprinted 2008.

REFERENCE(S)

1. K.P. Soman, Shyam Diwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
2. G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
3. Pang-Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.

**K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)
REGULATION 2012**

SEMESTER - V

CA124506	CLOUD COMPUTING (ELECTIVE)	L	T	P	C
		3	1	0	4

Objective(s):

- *To understand the cloud computing and its services available today.*
- *To understand all Platforms, Cloud Infrastructure and Technologies.*
- *To understanding the Mobile Cloud, WAP and other Protocols.*
- *To use Google and Amazon web Services.*

UNIT – I UNDERSTANDING CLOUD COMPUTING 12 Hrs

Defining Cloud Computing - Cloud types - Examining the characteristics of cloud computing - Assessing the value Proposition – Measuring the Cloud's value - Avoiding Capital Expenditures - Understanding Cloud Architecture - Exploring the Cloud Computing Stack - Connecting to the cloud-understanding Services-Defining Infrastructure as a service.

UNIT – II USING PLATFORMS 12 Hrs

Understanding Abstraction and Virtualization – Capacity Planning – Defining Baseline and Metrics-Network Capacity – Exploring Platform as a service – Using Google Web Services – Surveying the Google Application Portfolio – Using Amazon Web Services

UNIT – III EXPLORING CLOUD INFRASTRUCTURE 12 Hrs

Managing the Cloud – Administrating the Clouds – Cloud Management Products – Emerging Cloud Management Standards – Understanding Cloud Security – Securing the cloud – Securing data – Establishing Identity and Presence.

UNIT – IV UNDERSTANDING SERVICES AND APPLICATIONS 12 Hrs

Understanding Service Oriented Architecture – Moving Applications to the Cloud - Working with Cloud-Based Storage – Working With Productivity Software.

UNIT – V USING THE MOBILE CLOUD 12 Hrs

Working with Mobile Devices - Defining the Mobile Market – Using Smart phones with the Cloud – Working with Mobile Web Services – Understanding Services types – Performing Services Discovery – Using SMS – Defining WAP and Other Protocols – Performing Synchronization.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. Barrie Sosinsky, Cloud Computing Bible, Wiley Publishing, Reprint 2011.

REFERENCE(S):

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, 1st Edition, Que Publishing, and August 2008.
2. Anthony T Velte, Toby J Velte, Robert Elsenpeter, Cloud Computing: A Practical Approach, 3rd Edition, Tata McGraw-Hill 2010.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER-V**

CA124507	MOBILE COMPUTING (ELECTIVE)	L	T	P	C
		3	1	0	4

Objective(s):

- *To learn the basics of Wireless voice and data communications technologies.*
- *To build working knowledge on various telephone and satellite networks.*
- *To study the working principles of wireless LAN and its standards.*
- *To build knowledge on various Mobile Computing algorithms.*
- *To build skills in working with Wireless application Protocols to develop Mobile content applications.*

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS 12 Hrs

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II TELECOMMUNICATION SYSTEMS 12 Hrs

GSM – System Architecture – Protocols – Connection Establishment – Handover – Security – GPRS, DECT.

UNIT III WIRELESS NETWORKS 12 Hrs

Wireless LAN – IEEE 802.11 Standards – Architecture – services – HIPERLAN – AdHoc Network – Blue Tooth.

UNIT IV NETWORK LAYER 12 Hrs

Mobile IP – Dynamic Host Configuration Protocol – Routing – DSDV – DSR – AODV – ZRP – ODMR.

UNIT V TRANSPORT AND APPLICATION LAYERS 12 Hrs

TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery – Transmission/Timeout Freezing – Selective Retransmission – Transaction Oriented TCP – WAP.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. Jochen Schiller, "Mobile Communications", Second Edition, Prentice Hall of India / Pearson Education, 2nd Edition, 2011.
2. C.Sivaram murthy & B.S.Manoj, "Adhoc wireless Networks", Pearson Education, 2012.

REFERENCE(S):

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.
3. C.K.Toh, "AdHoc Mobile Wireless Networks", Prentice Hall Inc., 2002.
4. William Stallings, "Wireless Communications and Networks", 2nd Edition, Prentice Hall of India / Pearson Education, 2004.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER – V

CA124508 DISTRIBUTED COMPUTING (ELECTIVE)

L	T	P	C
3	1	0	4

Objective(s):

- *To understand the architecture and models of distributed computing.*
- *To learn the interprocess and remote communication.*
- *To understand synchronization.*
- *To know the distributed system management.*
- *To learn the File system concepts in distributed computing.*

UNIT – I INTRODUCTION

12 Hrs

Introduction - Architectures for Distributed Systems - Distributed Computing Models - Software Concepts - Issues in Designing Distributed Systems - Client/Server Models. NETWORK COMMUNICATION: LAN and WAN Technologies - Protocols for Network Systems -Asynchronous Transfer Mode - Protocols for Distributed Systems.

UNIT – II INTERPROCESS AND REMOTE COMMUNICATION

12 Hrs

Message Passing - Group Communication - API for Internet Protocol. REMOTE COMMUNICATION: Introduction - Remote Procedure Call Basics - RPC Implementation - RPC Communication - RPC Issues - RMI Basics - RMI Implementation.

UNIT – III SYNCHRONIZATION

12 Hrs

Introduction – Clock Synchronization – Logical Clocks – Global State – Mutual Exclusion – Election Algorithms – Deadlocks in Distributed Systems.

UNIT – IV DISTRIBUTED SYSTEM MANAGEMENT

12 Hrs

Introduction – Resource Management – Task Assignment Approach – Load Balancing Approach – Load Sharing Approach – Process Management in a Distributed Environment –Process Migration – Threads – Fault Tolerance.

UNIT – V DISTRIBUTED FILE SYSTEMS

12 Hrs

Introduction - File Models - DFS Design - File Sharing Semantics – DFS Implementation – File Caching in DFS – Replication in DFS. NAMING: Introduction – Desirable Features of a good Naming system – Basic concepts – System Oriented Names – Name caches - Naming and Security.

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. Sunita Mahajan, Seema Shah, Distributed Computing, Oxford University Press, 2nd Edition, 2013.

REFERENCE(S):

1. M.L.Liu, Distributed Computing Principles and Applications, Pearson Education, 2007.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

CA124509	NATURAL LANGUAGE PROCESSING (ELECTIVE)	L	T	P	C
		3	1	0	4

Objective(s):

- To tag a given text with basic Language processing features, design an innovative application using NLP components,
- To implement a rule based system to tackle morphology/syntax of a Language, design a tag set to be used for statistical processing keeping an application in mind, design a Statistical technique for a new application,
- To Compare and contrast use of different statistical approaches for different types of applications.

UNIT – I INTRODUCTION**12 Hrs**

Natural Language Processing tasks in syntax, semantics, and pragmatics – Issues - Applications - The role of machine learning - Probability Basics –Information theory – Collocations -N-gram Language Models - Estimating parameters and smoothing - Evaluating language models.

UNIT – II MORPHOLOGY AND PART OF SPEECH TAGGING**12 Hrs**

Linguistic essentials - Lexical syntax- Morphology and Finite State Transducers - Part of speech Tagging - Rule-Based Part of Speech Tagging - Markov Models - Hidden Markov Models – Transformation based Models - Maximum Entropy Models-Conditional Random Fields.

UNIT – III SYNTAX PARSING**12 Hrs**

Syntax Parsing - Grammar formalisms and treebanks - Parsing with Context Free Grammars - Features and Unification -Statistical parsing and probabilistic CFGs (PCFGs)-Lexicalized CFGs.

UNIT – IV SEMANTIC ANALYSIS**12 Hrs**

Representing Meaning – Semantic Analysis - Lexical semantics –Word-sense disambiguation - Supervised – Dictionary based and Unsupervised Approaches - Compositional semantics-Semantic Role Labeling and Semantic Parsing – Discourse Analysis.

UNIT – V APPLICATIONS**12 Hrs**

Named entity recognition and relation extraction- IE using sequence labeling- Machine Translation (MT) - Basic issues in MT-Statistical translation-word alignment- phrase-based translation – Question Answering.

Lecture: 45 Tutorial: 15 Total Hours: 60**TEXT BOOK(S):**

1. Daniel Jurafsky and James H. Martin “Speech and Language Processing” 2nd Edition, Prentice Hall, 2008.
2. Foundations of Statistical Natural Language Processing by Christopher D. Manning and Hinrich Schuetze, MIT Press, 1999.

REFERENCE(S):

1. Pierre M. Nugues, An Introduction to Language Processing with Perl and Prolog: An Outline of Theories, Implementation, and Application with Special Consideration of English, French, and German (Cognitive Technologies) Soft cover reprint, 2010
2. James Allen, Natural Language Understanding, Addison Wesley; 2nd edition 1994
3. NLTK – Natural Language Tool Kit - <http://www.nltk.org/>
4. Steven Bird, Ewan Klein and Edward Loper Natural Language Processing with Python, O'Reilly Media; 1st edition, 2009.
5. Roland R. Hausser, Foundations of Computational Linguistics: Human- Computer Communication in Natural Language, Paperback, MIT Press, 2011.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATIONS 2012

SEMESTER – V

CA124510

BIO - INFORMATICS (ELECTIVE)

L T P C

3 1 0 4

Objective(s):

- *To learn the key aspects of bio informatics and search engines*
- *To gain insight contents Of mining the patterns*
- *To gain knowledge in modeling structures*

UNIT I INTRODUCTORY CONCEPTS

12Hrs

The Central Dogma – The Killer Application – Parallel Universes – Watson's Definition –Top down Versus Bottom up – Information Flow – Convergence – Databases – Data Management – Data Life Cycle – Database Technology – Interfaces – Implementation –Networks – Geographical scope – Communication Models – Transmissions Technology – Protocols – Bandwidth – Topology – Hardware – Contents – Security – Ownership – Implementation – Management.

UNIT II SEARCH ENGINES AND DATA VISUALIZATION

12Hrs

Search Engines- The search process – Search Engine Technology – Searching and Information Theory –Computational methods – Search Engines and Knowledge Management – Data Visualization – sequence visualization – structure visualization – user Interface –Animation Versus simulation – General Purpose Technologies.

UNIT III STATISTICS AND DATA MINING

12Hrs

Statistical concepts – Microarrays – Imperfect Data –Basics— Quantifying Randomness – Data Analysis – Tool selection- statistics of Alignment – Clustering and Classification – Data Mining – Methods – Infrastructure-Pattern Recognition and Discovery – Machine Learning – Text Mining – Tools.

UNIT IV PATTERN MATCHING

12Hrs

Fundamentals – Dot Matrix analysis – Substitution matrices –Dynamic Programming – Word methods – Bayesian methods – Multiple sequence alignment –Tools

UNIT V MODELING AND SIMULATION

12Hrs

Drug Discovery – Fundamentals - – Protein structure – – Systems Biology – Tools – Collaboration and Communications – standards -Issues

Lecture: 45 Tutorial: 15 Total Hours: 60

TEXT BOOK(S):

1. Bryan Bergeron, "Bio Informatics Computing", 2nd Edition, Pearson Education, 2004.

REFERENCE(S):

1. T.K.Attwood and D.J. Perry Smith, "Introduction to Bio Informatics, Longman Essen, 1999.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

CA124511	ELECTRONIC COMMERCE (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- To know about of the history of online business, marketing and the Internet.
- To understand the Security Technologies for Electronic Commerce.
- To understand the E-Commerce payment systems.
- To know how businesses sell products and services on the Web.
- To Understand Web marketing approaches and elements of branding.

UNIT I INTRODUCTION**9Hrs**

Networks and Commercial Transactions - Internet and Other Novelties - Electronic Transactions Today - Commercial Transactions - Establishing Trust - Internet Environment - Internet Advantage - World Wide Web.

UNIT II SECURITY TECHNOLOGIES**9Hrs**

Types of Security Technologies - Internet Security Holes - Inside Attacks – Outside attacks - Cryptography: Objective - Codes and Ciphers - Breaking Encryption Schemes - Data Encryption Standard - Trusted Key Distribution and Verification - Cryptographic Applications.

UNIT III ELECTRONIC PAYMENT METHODS**9Hrs**

Payment Technology Issues – Electronic Payment Methods Through Smart Cards – Visa – MasterCard – Electronic Payment Systems – Digital Currencies - Digital Payments Systems– payment Service Providers.

UNIT IV ELECTRONIC COMMERCE PROVIDERS**9Hrs**

Types of E-Commerce Providers and Vendors - Online Sales Channels - Virtual Transaction Process - Security Considerations – Cyber Cash - Customer Protection - Client Application - Selling through Cyber Cash – Mobile Electronic Commerce.

UNIT V ONLINE COMMERCE ENVIRONMENTS**9Hrs**

Servers and Commercial Environments - Server Market Orientation - Netscape Commerce Server - Microsoft Internet Servers - Ecash Client Software and Implementation - Electronic Data Interchange – Implementing E-Commerce Databases.

Total Hours: 45**TEXT BOOK(S):**

1. Pete Loshin, John Vacca "Electronic Commerce", 4th Edition, Firewall media, An imprint of laxmi publications Pvt. Ltd., New Delhi, 2013.

REFERENCE(S):

1. Jeffrey F.Rayport and Bernard J. Jaworski, "Introduction to E-Commerce", 2nd Edition, Tata Mc-Graw Hill Pvt., Ltd., 2009.
2. Greenstein, "Electronic Commerce", Tata Mc-Graw Hill Pvt., Ltd., 2003.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)
REGULATION 2012
SEMESTER – V

CA124512	SUPPLY CHAIN MANAGEMENT (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- Understand how supply chain strategy can provide a competitive advantage for organizations
- Analyze the balance between customer satisfaction level and inventory management policies
- Leverage supplier and distributor capabilities within value generating business processes
- Apply information systems to support collaboration and visibility of supply chains

UNIT I INTRODUCTION 9Hrs
Supply Chain – Fundamentals, Importance, Decision Phases, Process View. Supplier-Manufacturer-cluster chain. Drivers of Supply Chain Performance. Structuring Supply Chain Drivers. Overview of Supply Chain Models and Modeling Systems

UNIT II STRATEGIC SOURCING 9Hrs
In-sourcing and Out-sourcing – Types of Purchasing Strategies. Supplier Evaluation, Selection and Measurement. Supplier Quality Management. Creating a world class supply base. World Wide Sourcing

UNIT III SUPPLY CHAIN NETWORK 9Hrs
Distribution Network Design – Role, Factors Influencing, Options, Value Addition. Models for Facility Location and Capacity Location. Impact of Uncertainty on Network Design. Network Design decision trees. Distribution Center Location Models. Supply Chain Network optimization models

UNIT IV PLANNING DEMAND,INVENTORY AND SUPPLY 9Hrs
Overview of Demand forecasting in the supply chain. Aggregate planning in the supply chain. Managing Predictable Variability. Managing supply chain cycle inventory. Uncertainty in the supply chain – Safety Inventory. Determination of Optimal level of product availability. Coordination in the Supply Chain.

UNIT V CURRENT TRENDS 9Hrs
E-Business – Framework and Role of Supply Chain in e-business and b2b practices. Supply Chain IT Framework. Internal Supply Chain management. Fundamentals of transaction management. Supply Chain in IT practice. Supplier relationship management. Information Systems development. Packages in Supply Chain –eSRM, eLRM, eSCM.Supply Base Management.

Total Hours: 45

TEXT BOOK(S):

1. Sunil Chopra and Peter Meindi, Supply Chain Management-Strategy Planning and Operation,Pearson Education,3rd Indian Reprint 2004
2. Monczka et al., Purchasing and Supply Chain Management,Thomson Learning,2nd edition, 2nd Reprint,2002

REFERENCE(S):

1. Altekhar Rahul V,Supply Chain Management-Concept and Cases,Prentice Hall India, 2005
2. Shapiro Jeremy F,Modeling the Supply Chain,Thomson Learning,2nd Reprint,2002
3. Ballou Ronald H, Business Logistics and Supply Chain Management, Pearson Education, 2nd Indian Reprint, 2004.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

CA124513	XML AND WEB SERVICES (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- *To understand the fundamentals of XML*
- *To learn the web services architecture*
- *To learn the implementation of XML in various areas*

UNIT I XML FUNDAMENTALS 9Hrs

Essentials-benefits-Advantages-Drawbacks-Introduction-Document Structure-Content models-Rules-Well formed and Valid Documents-Linking XML Documents-Name Spaces-styles and processing.

UNIT II ARCHITECTING WEB SERVICES 9Hrs

Business motivations for web services –Technical motivations for web services– Service-oriented Architecture (SOA) – Architecting web services

UNIT III WEB SERVICES BUILDING BLOCK 9Hrs

SOAP- Introduction to WSDL-Basic WSDL Syntax-SOAP Binding-WSDL implementation-Introduction to UDDI-The UDDI API-Vendor Implementations-The future of UDDI.

UNIT IV IMPLEMENTING XML IN E-BUSINESS 9 Hrs

B2B – B2C Applications – Different types of B2B interaction – Components of ebusiness XML systems – eb XML – Rosetta Net - Applied XML in vertical industry.

UNIT V XML AND CONTENT MANAGEMENT 9 Hrs

Components-The role of XML IN Web Content Management –Web Dav Document Creation-Designing of XML Content Environment-Role of RDF and PRISM in Web Content-web content syndication with RSS and ICE-Selecting a Content Management Solution

Total Hours: 45**TEXT BOOK(S):**

1. Ron Schmelzer et al. "XML and Web Services", 2nd Edition, Pearson Education, 2002.

REFERENCE(S):

1. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", 4th Edition, Prentice Hall, 2004.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER – V

CA124514

WEB GRAPHICS (ELECTIVE)

L T P C

3 0 0 3

Objective(s):

- To study the concepts of HTML, Photoshop, Photoshop Pro, the concepts of handling audio, video and animation on web page and the creation of interactive web sites.

UNIT I INTRODUCTION

9 Hrs

HTML coding - Basic web graphics - Web page design and site building - Image maps - Adding multimedia to the web- Vector and Raster graphics.

UNIT II RASTER IMAGE EDITING SOFTWARE

9 Hrs

Introduction - Image Basics - File Formats - GIF - JPEG - Color Palette – Color models-Layers - Creating new Images - Brushes – Grids and Guides- Gradients – Scaling Images - Moving and Merging Layers - Tool Palette - Dialogs - Masking – Filters – Adding text to images – Designing icons and background images.

UNIT III VECTOR IMAGE HANDLING

9 Hrs

Introduction – Creating Simple Vector graphics – Creating banners -Images - Working with layers – Tweening - Motion guide – Masking – Frame by Frame animation – Onion Skin Effect – Creating special effects - Text effects and animation – Action scripts.

UNIT IV MULTIMEDIA

9 Hrs

Creating clippings - Animations with sound effects - Adding audio or Video - Windows Media Player ActiveX Control - Agent control - Embedding VRML in a web page - Real Player ActiveX control.

UNIT V APPLICATIONS

9 Hrs

Creating web site with a particular theme using all the utilities - Graphics - Animations and Interaction.

Total Hours: 45

TEXT BOOK(S):

1. Adobe creative team, Adobe Photoshop elements 7 and Adobe premiere elements 7 classroom in a book collection, Adobe Press, 2009.

REFERENCE(S):

1. Lisa Danae Dayley, Brad Dayley, Adobe Photoshop CS5 Bible, 2012.
2. Steve Romaniello, Photoshop 7, BPB Publications, 2007.
3. Todd Perkins, Adobe Flash Professional CS5, Wiley India Edition, 2012.
4. Adobe creative team, Adobe Flash CS4 professional classroom in a book, Adobe Press, 2009.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V****CA124515****E – LEARNING TECHNOLOGY (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- *To provides the deep knowledge about E-learning Concepts and Tools available which helps to improve the learning technology.*

UNIT I INTRODUCTION**9Hrs**

What is e-learning – e-learning evolution – Advantages and Disadvantages of e-learning – Instructional design models for e-learning – Applying user – centered design to e-learning – rapid e-learning.

UNIT II KEEPING THE E-LEARNING STRATEGY FORWARD**9Hrs**

Learning Strategy – Process for developing the e- learning strategy- Doomed to failure – Keeping focused on the strategy – Instructional strategies for e-learning.

UNIT III DELIVERING E-LEARNING & E-LEARNING EVALUATION**9Hrs**

Delivering e-learning – Instructional game characteristics – Educational podcasting- Gaming at work – Delivering e-learning synchronously – e-learning education – Four levels of evaluating learning – learning analytics – Evaluation models.

UNIT IV WEB STANDARDS**9Hrs**

What are web standards? – Who is involved in web standards? Resources for guidance on web standards – How are web standards used in education – Web standards for designers – Validators - W3C Keeping it simple.

UNIT V E-LEARNING TOOLS**9Hrs**

E-learning tools – What is e-learning tool? – E-learning authoring tools – Wikis and e-learning.

Total Hours: 45**TEXT BOOK(S):**

1. The e-Learning Guild's Handbook of e-Learning Strategy Foreword by Marc Rosenberg Chapters by Kevin Moore, Frank Hanfland, Patti Shank, Lisa Young, Lance Dublin, Ryan Watkins, Michael Corry Bill Brandon, Editor sponsored by Compilation Copyright 2007 by The e-Learning Guild.
2. E-Learning Concepts and Techniques by Bloomsburg University of Pennsylvania's Department of Instructional Technology students and guest authors.

REFERENCE(S):

1. The Insider's Guide to Becoming a Rapid E-Learning Pro – Tom Kuhlmann.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER-V

CA 124516	HEALTH CARE INFORMATION SYSTEMS (ELECTIVE)	L	T	P	C
Objective(s):		3	0	0	3

- *To be able to describe the major types of health care information (internal and External) that are captured or used or both in health care organizations.*
- *To be able to cite specific examples of the major types of health care information.*
- *To be able to identify the major advances in information technology and significant Federal initiatives that influenced the adoption of health care information systems.*
- *To be able to discuss why information technology (IT) adoption rates are lower in health care compared with other industries.*

UNIT I INTRODUCTION 9Hrs

Introduction to Healthcare information –Health Care Data Quality-Healthcare Information Regulations, Laws and standards.

UNIT II HEALTHCARE INFORMATION SYSTEMS 9Hrs

History and Evolution of Healthcare Information Systems-Current and Emerging use of clinical Information Systems-System Acquisition-system Implementation and Support.

UNIT III INFORMATION TECHNOLOGY 9Hrs

Information Architecture and Technologies that support Health Care Information Systems-Health Care Information Systems Standards-Security of Healthcare Information Systems.

UNIT IV MANAGEMENT OF IT CHALLENGES 9Hrs

Organizing Information Technology Services-IT Alignment and Strategic Planning-IT Governance and Management.

UNIT V IT INITIATIVES 9Hrs

Management's role in major IT initiatives-Assessing and Archiving value in Healthcare Information systems.

Total Hours: 45

TEXT BOOK(S):

1. Karen A Wager, France Wickham Lee, John P Glaser," Managing Healthcare Information Systems: A Practical Approach for Health CARE Executives", Jossey Bass/Wiley, 2005.

REFERENCE (S):

1. Rudi Van De Velde and Patrice Degoulet," Clinical Information Systems: A Component Based Approach ", Springer 2005.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)**REGULATION 2012****SEMESTER – V**

CA124517	ENTERPRISE COMPUTING (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- To understand the complexity of enterprise applications.
- To learn the Architecture with the J2EE, RMI, CORBA, DCOM Communication.
- To understand the Services for Distributed Enterprise Systems components.
- To learn about Web enabling and Application enabling.

UNIT I ENTERPRISE FOUNDATIONS 9 Hrs

Enterprise Architectural overview - Object Oriented Software Development Process for the Enterprise- Component Based software development for enterprise- Java Enterprise System Architecture with the J2EE- Enterprise Data – Basic JDBC

UNIT II DISTRIBUTED ENTERPRISE COMMUNICATIONS ENABLING 9 Hrs

Distributed Enterprise Communications - Network Communications - Web Communications – Components with COBRA - DCOM Communications.

UNIT III SERVICES FOR DISTRIBUTED ENTERPRISE SYSTEMS 9 Hrs

Naming Services - Directory and Trading services - Activation Services - Transaction Services, High assurance Enterprise Applications.

UNIT IV ENTERPRISE WEB ENABLING 9 Hrs

Web Browsers and Web Servers in Enterprise- Traditional Web Programming and java- Java Server Pages.

UNIT V ENTERPRISE APPLICATIONS ENABLING 9 Hrs

Enterprise Application Platforms - Application Servers and Enterprise JavaBeans –Advanced Enterprise JavaBeans Serving- Enterprise Application Integration.

Total Hours: 45**TEXT BOOK(S):**

1. Paul J Perrone, Venkata S.R. Krishna R and Chayanti, "Building Java Enterprise Systems With J2EE", Techmedia , New Delhi, 2005

REFERENCE(S):

1. Dustin R. Callaway - "Inside Servlets " - Addison Wesley Longman Inc, New Delhi, 2001.
2. Tom Valesky - "Enterprise Java Beans" - Addison Wesley Longman Inc. New Delhi, 2000.

K.S.R. COLLEGE OF ENGINEERING (AUTONOMOUS)

REGULATION 2012

SEMESTER – V

CA124518	AGENT BASED INTELLIGENT SYSTEMS (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- To explain the basic knowledge representation, problem solving and learning methods of AI.
- To explore the knowledge representation and reasoning
- To plan the agents in various state and domain scenarios
- To develop intelligent systems by assembling solutions to concrete computational problems.

UNIT I INTRODUCTION 9Hrs
Definitions - Foundations - History - Intelligent Agents-Problem Solving-Searching - Heuristics - Constraint Satisfaction Problems - Game playing.

UNIT II KNOWLEDGE REPRESENTATION AND REASONING 9Hrs
Logical Agents-First order logic-First Order Inference-Unification-Chaining- Resolution Strategies- Knowledge Representation-Objects-Actions-Events

UNIT III PLANNING AGENTS 9Hrs
Planning Problem-State Space Search-Partial Order Planning-Graphs-Nondeterministic Domains- Conditional Planning-Continuous Planning-Multi Agent Planning.

UNIT IV AGENTS AND UNCERTAINTY 9Hrs
Acting under uncertainty – Probability Notation-Bayes Rule and use - Bayesian Networks- Other Approaches - Time and Uncertainty-Temporal Models - Utility Theory - Decision Network - Complex Decisions.

UNIT V HIGHER LEVEL AGENTS 9Hrs
Knowledge in Learning-Relevance Information-Statistical Learning Methods- Reinforcement Learning-Communication-Formal Grammar-Augmented Grammars- Future of AI.

Total Hours: 45

TEXT BOOK(S):

1. Stuart Russell and Peter Norvig, "Artificial Intelligence - A Modern Approach", 2nd Edition, Pearson, 2011.

REFERENCE(S):

1. Michael Wooldridge, "An Introduction to Multi Agent System", John Wiley, 2002.
2. Patrick Henry Winston, Artificial Intelligence, 3rd Edition, AW, 1999.
3. Nils.J.Nilsson, Principles of Artificial Intelligence, Narosa Publishing House, 1992

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REGULATION 2012

SEMESTER-V

CA 124520	MIDDLEWARE TECHNOLOGY (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- To introduce the concepts, techniques and applications of Middleware Technology.
- To understand middleware components like COM, CORBA and EJB.

UNIT I INTRODUCTION CLIENT / SERVER & MIDDLEWARE TECHNOLOGY 9Hrs

Client / Server- Server types- Middleware – Client, Server and Operating System-Introduction to distributed Object Technology-Middleware – Client/Server Building Blocks – Peer-to Peer Communications–RPC-Messaging-Java RMI-Overview of CORBA and DCOM.

UNIT II EJB ARCHITECTURE 9Hrs

EJB – EJB Architecture – Overview of EJB software architecture – View of EJB –Conversation – Building and Deploying EJBs – Roles in EJB.

UNIT III EJB APPLICATIONS 9Hrs

Types of Enterprise beans –Lifecycle of Beans-Steps in Developing an Application Using EJB Framework, EJB DeploymentEJB Session Beans – EJB entity beans – EJB clients – EJB Deployment – Building an Application with EJB.

UNIT IV CORBA 9Hrs

Introduction and Concepts-CORBA Components-Architectural Features-Method Invocations-Static and Dynamic CORBA-Structure of CORBA IDL-Self Describing Data types-Building an Application using CORBA-Advanced CORBA- CORBA Object Service-Object Location Service-Message Service-CORBA Component Model.

UNIT V COM 9Hrs

Evolution of DCOM, COM Client and Server, COM IDL, COM Interface-COM threading Model, Marshalling, Comparision of RMI, CORBA and DCOM.Programming Examples of RMI, CORBA and DCOM.

Total Hours: 45

TEXT BOOK(S):

1. Robert Orfali, Dan Harvey and Jeri Edwards, "The Essential Client / Server Survival Guide", Golgotha Publications Pvt. Ltd., 2009.
2. G.Sudha Sadasivam, Radha Shankarmani,"Middleware &Enterprise Integration Technologies." 2010.

REFERENCE (S):

1. Chris Britton and Peter Eye, "IT Architecture and Middleware", Pearson Education, 2nd Edition, 2004.
2. Wolfgang Emmerich, "Engineering Distributed Objects", John Wiley, 2000.
3. Michah Lerner, "Middleware Networks: Concept, Design and Deployment of Internet Infrastructure", Kluwer Academic Publishers, 2000.

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CA124521	MOBILE APPLICATION DEVELOPMENT (ELECTIVE)	L	T	P	C
		3	0	0	3

Objective(s):

- *This subject deals with various Mobile Application Concepts and Methodologies.*
- *To Acquire Knowledge on various Mobile Application Techniques and Android platforms.*
- *To have enriched knowledge regarding Black box testing, test automation of mobile apps.*

UNIT I GETTING STARTED WITH MOBILITY 8 Hrs

Mobility landscape - Mobile platforms - Mobile apps development - Overview of Android platform - setting up the mobile app development environment along with an emulator - a case study on Mobile app development

UNIT II BUILDING BLOCKS OF MOBILE APPS 13 Hrs

App user interface designing – mobile UI resources (Layout, UI elements, Draw-able, Menu) – Activity - states and life cycle - interaction amongst activities. App functionality beyond user interface – Threads - Async task - Services – states and lifecycle – Notifications - Broadcast receivers - Telephony and SMS APIs Native data handling – on-device file I/O - shared preferences - mobile databases such as SQLite - and enterprise data access (via Internet/Intranet)

UNIT III SPRUCING UP MOBILE APPS 8 Hrs

Graphics and animation – custom views – canvas - animation APIs - multimedia – audio/video playback and record - location awareness - and native hardware access (sensors such as accelerometer and gyroscope)

UNIT IV TESTING MOBILE APPS 8 Hrs

Debugging mobile apps - White box testing - Black box testing - and test automation of mobile apps - JUnit for Android – Robotium - Monkey Talk

UNIT V TAKING APPS TO MARKET 8 Hrs

Versioning - signing and packaging mobile apps - distributing apps on mobile market place.

Total Hours: 45**TEXT BOOK(S):**

1. Professional Mobile Application Development “– Jeff McWherter & Scott Gowellr, John Wiley & sons, Inc, 2012.
2. Professional Android Development - Reto Meier, Wiley Publishing, INC.2012.

REFERENCE (S):

1. Architecting Mobile Solutions for the Enterprise – Dino Esposito, O'Reilly Media, INC, 2012.
2. Beginning Mobile Application Development in the cloud. Richard Rodger, John Wiley & Son, INC, 2012.
3. Professional Android tm Application Development, Reto Meier, John Wiley & Son, INC, 2012.